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Enquiry services provided by trade journal editorials*

Margaret Bidmead

Research Information Services, Wellcome Research Laboratories, Beckenham, Kent

A survey was carried out to determine the ways in which trade journal editors are able to answer the various types of enquiry which they receive, and to discover how far they are willing to do so. Editors of thirty-five paid-circulation and five controlled-circulation journals were interviewed by means of the informal guided (focused) technique, the majority on a personal-interview basis. The results from the paid-circulation journals indicated that most of the enquiries received are telephoned, and require trade information. These can be answered most easily by the editors. Technical enquiries can be dealt with successfully by about half of the editors interviewed. Out of the enquiries relating to journal-published material, those referring to editorial articles are usually handled by the editors concerned, whereas those referring to contributed articles tend to be referred to the contributing authors. Enquiries for marketing information can again be answered by about half of the editors interviewed, usually those whose journals aim to cover the marketing aspects of their fields. Peripheral enquiries tend to be referred to other trade journals. Most of the editors are prepared to spend between fifteen minutes and one hour on an enquiry, if necessary. About half of them are prepared to do research to find out answers to enquiries, and will give detailed answers when they are required. Just under half of the editors interviewed considered that readers' enquiries are very important, and nine of the sample journals provide some type of specialized enquiry service to deal with them. Since editors are up to date and well informed in their fields, they can usually put the enquirer in touch with people who can help. The degree to which an editor will help an enquirer depends largely on his personal attitude (whether he enjoys answering enquiries, for example), and also on the time he has available and whether he thinks the enquirer is 'genuine'. The results of the interviews with controlled-circulation journal editors were very similar to those of paid-circulation journal editors.

Introduction

A PAID-CIRCULATION trade journal may be defined as a commercially produced periodical sold largely on subscription, which attempts to publish original articles, either contributed or staff-written, to report on new techniques in its field, to describe new equipment and to provide news about the industry concerned. It is therefore expected that the editorial staff of such journals should answer enquiries as a service to their readers and to promote their journal. However, subscribers no longer really pay for these journals, as 80–95 per cent of the costs are borne by the advertisers.[1] Here paid-circulation journals are in direct competition with controlled-circulation journals, which are financed solely by advertising. Advertisers tend to achieve better results by using controlled-circulation journals as media; a recent survey has shown that a higher percentage of worthwhile replies results from advertising in controlled-circulation than in paid-circulation journals.[2] There has therefore been a tendency for paid-circulation journals, particularly those in the engineering field, to change to a controlled-circulation basis (Figure 1).

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* This report is based on a thesis presented in partial fulfilment of the requirements for the M.Sc. in Information Science at City University, 1972.

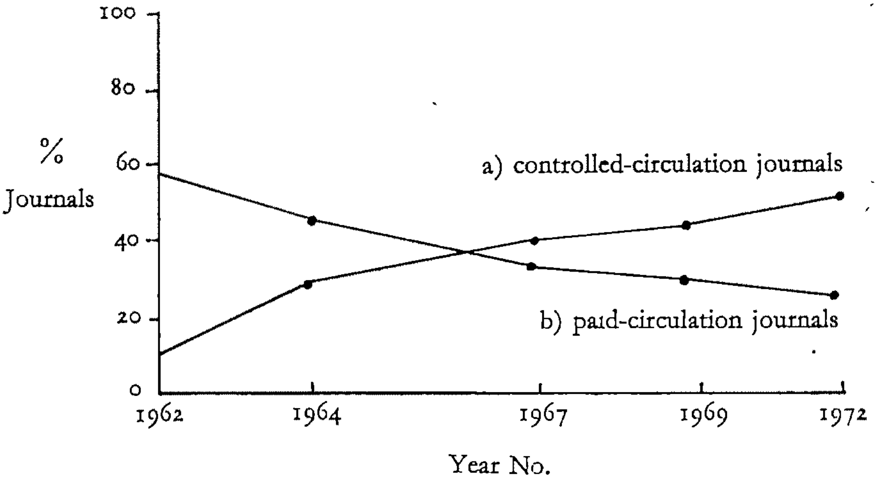

FIG. 1: *(a) The increase of controlled-circulation trade journals and (b) the decrease of paid-circulation trade journals in the engineering field over the last ten years. These figures were compiled from the engineering sections of August issues of* British Rate and Data *(Maclean–Hunter Publns.)*

In order to survive, the remaining paid-circulation journals have been forced to introduce advertising aids, such as the reply-paid reader enquiry cards which are characteristic of controlled-circulation journals, and to take economy measures, which include reducing the numbers of editorial staff.

This suggests that the editors themselves may have very little time available to answer readers' enquiries, and may feel less obliged to do this since subscriptions form a very small part of the journal's income (the above-mentioned reader enquiry service cards are generally dealt with by the advertising departments, and serve only to process requests for manufacturers' literature). To test this hypothesis, information was sought on the ways in which editors of paid-circulation trade journals are able to answer enquiries, in order to determine how far they are able to go in this and how much detail they are prepared to give.

Controlled-circulation journals have also modified their editorial policies in recent years. Advertisers are now demanding journals of a high standard that will be *read* by engineers, with editorial and technical articles written by a technical editorial staff.[3] Such journals are very similar in content to their paid-circulation counterparts. It was therefore decided that a small number of these journals should be included in the survey sample, to see whether they differed from paid-circulation journals in their attitudes towards answering readers' enquiries.

Methodology

For the survey a sample of thirty-five paid-circulation trade journals was taken, mainly from the fields of engineering and the food industry, and a further sample of five controlled-circulation trade journals was selected from similar fields. Interviews were arranged with members of the editorial staff of these journals. The personal-interview method was adopted, as this seemed the most appropriate interviewing method for the purposes of this survey.[4] The majority of the interviews were conducted on this basis, though for some respondents telephone interviews were more convenient (Table 1).

TABLE I

TYPE OF RESPONDENT	INTERVIEW METHOD *Personal*	*Telephone*	*Total*
Paid-circulation journal editor	30	5	35
Controlled-circulation journal editor	2	3	5
Total	32	8	40

The informal interviewing technique of guided or focused interviewing was used.[5] Here the interviewer aims to cover a given set of topics in a more or less systematic way, whilst allowing the respondent a good deal of freedom to talk around each topic. There is no set questionnaire and most of the questions are open ones. Such interviewing is less inflexible than formal interviewing methods, yet gives the interview a set form and ensures that all the relevant topics are discussed. The respondents are all asked for certain information, yet they have the opportunity to develop their views at length. The interviewer is free to choose when and how much to explore and probe, but always keeps within the framework imposed by the topics to be covered.

The interviews with trade journal editors were constructed around the following questions:

General questions concerning the journal as a whole

1. What is the subject area of the journal, its scope and readership?
2. What is the journal's circulation?
3. Are there any technical editors?
4. Is there a readers' information service (editorial administration)?
5. Is there a reader enquiry card service (advertising department administration)?
6. Are readers' enquiries received by the journal telephoned or written?

Specific questions concerning readers' enquiries received by the editorial staff

1. What is the relative frequency of the following types of enquiry, and how do you attempt to answer them?
   (a) Trade enquiries requiring names, addresses of manufacturers, agents, suppliers of equipment etc.;

(b) Technical enquiries (excluding those referring to published material);
(c) Technical enquiries relating to published articles or editorial, either contributed or staff-written;
(d) Marketing and commercial enquiries;
(e) Peripheral enquiries for the journal's field of coverage.

2. How far are you prepared to go to find the answer to an enquiry which, although within your field, you cannot recollect?
3. How much time are you prepared to spend on an enquiry?
4. How much detail are you prepared to give in an answer?
5. Do you keep any records of enquiries?
6. Do you differentiate between subscribers and non-subscribers in answering their enquiries?
7. Are there any special points of interest which you would like to mention concerning readers' enquiries?

A personal impression of the respondents was also noted by the interviewer.

The length of the interviews varied, but the majority lasted between thirty minutes and one hour. They were on the whole highly successful, giving a clear, quite detailed picture of how editors handle their readers' enquiries. However, there are two factors which must be taken into account when using this informal interviewing technique.[5] Firstly, it gives much greater scope to the personal influence and bias of the interviewer. This means that the reliability of survey interviews is not very high; studies have shown that when respondents have been asked the same questions twice after a short interval, about eighty per cent gave the same answers if the same interviewer was used, and only about sixty per cent did so if a different interviewer was used.[6] Secondly, the information received from the interviews is mainly descriptive, and thus difficult to summarize and quantify. An attempt has been made, however, to express some aspects of the results in tabular form.

Results and discussion

(*i*) *Types of enquiry received by editorial staff of paid-circulation trade journals*

In general, editors receive more telephone enquiries than written ones: 51.5 per cent of the journal sample received mainly telephone enquiries, 31.5 per cent received equal numbers of telephone and written enquiries, and only 17 per cent received mainly written enquiries. According to one journal, the ratio of telephone/written enquiries has reversed over the years. In 1925, they received 1,703 written enquiries and only 700 telephone enquiries; last year they had 700 written enquiries and 1000 telephone enquiries. On the whole, however, it was impossible to obtain information on the actual numbers of telephone/written enquiries received as so few journals kept any records of them. The majority of editors did not mind whether enquiries were written or telephoned, but answered them accordingly. Some expressed a preference for telephone enquiries because a telephone reply takes less time than a written one. Others preferred written enquiries because they could then be answered during slack periods in the editorial office.

The types of enquiry received by the sample journals fell into four main categories: trade enquiries; technical enquiries relating to journal-published material; technical enquiries *not* relating to journal-published material; marketing enquiries. Trade enquiries form the highest proportion of the enquiries received for the majority of journals. A large number of marketing enquiries come from market research organizations, and feelings ran very high amongst editors about this. They consider that market researchers are being paid for picking *their* brains, often without acknowledgement or benefit to the journal. Therefore these market research enquiries are generally regarded as a nuisance and not worth any effort or time spent on them. In addition to the above types of enquiry, almost all the journals received some 'peripheral' enquiries, usually from non-subscribers.

Again, actual figures for the numbers of different types of enquiry received were unobtainable because so few journals kept any records of these. However, one journal had carried out a survey of enquiries received during a three-week period in 1969, and the results are given here (Table 2) as showing a typical pattern for trade journal enquiries. Over 85 per cent of the enquiries were from subscribers. One editor commented that out of all the possible enquiries a trade journal could have from its readership, it really receives a very small percentage. This is because a large number of readers (and others) do not realize that information is available from the editors. However, as the numbers of enquiries at present are more than enough in relation to the effort available to deal with them many editors feel they cannot publicize their information services because then they would have time for nothing else.

TABLE 2: *Analysis of reader enquiries answered over a three-week period in November 1969*

TYPE OF ENQUIRY	TELEPHONE	WRITTEN	TOTAL	% TOTAL
Trade enquiries answered from office records (about 90 per cent subs.)	70	38	108	70
Technical and trade enquiries requiring specialized engineering knowledge (about 100 per cent subs.)	17	18	35	22
Marketing enquiries from market research consultants (almost all non-subs.)	2	1	3	3.5
Miscellaneous enquiries on peripheral subjects (almost all non-subs.)	2	6	8	5.5
Total	91	63	154	100

(ii) *Methods of handling readers' enquiries used by trade journal editors*

Basically, there are two ways open to an editor for dealing with an enquiry; he can either answer it himself from his own knowledge and resources, or refer the enquirer to an appropriate organization which could provide the answer. Some editors use a combination of these two methods. They may attempt to give an answer, and at the same time refer the enquirer to sources of further information, or, although they are normally prepared to find out the answer, if they are very busy they may refer the enquirer directly to the source of information. Table 3 shows the percentage of journal editors in this survey using each of the above methods for answering the various types of enquiry.

TABLE 3: *Percentage of editors using given method of answering enquiries*

TYPE OF ENQUIRY	METHOD OF ANSWERING		
	Editorially	*Editorially and/or referring to other sources*	*Referring to other sources*
A. Trade	71.5	28.5	—
B. Technical—not relating to published article	50	32	18
C. Technical—relating to contributed article	35	18	47
D. Technical—relating to editorially written article	91	—	9
E. Marketing	48	20	32
F. Peripheral	—	18	82

Sample sizes: A,B,C, 34; D, 22; E, 31; F, 33.

Trade enquiries (A) are dealt with mainly by the editors themselves, from their own working knowledge of the field or from a selection of telephone and trade directories which most of them keep to hand. Several journals publish their own trade directories, from which the editors find they can answer most of their trade enquiries. A few journals have built up card index systems for trade information which the editors use for reference. Editors also use their 'contacts' in the industry for obtaining trade information, or go to specialized outside sources, such as the Patent Office for an obscure trade name query. Trade journal editors are probably one of the best sources for trade information, since it is part of their job to be up to date and well informed about the industries in their field. They may also feel more inclined to answer trade queries than any others, because this can be done relatively easily and quickly.

About half of the editors interviewed were also able to answer technical enquiries (B). A further third of the sample was prepared to attempt to answer these queries before referring the enquirer elsewhere. This is because most of the journals had technical editors or consultants who could provide the required information. Where the enquirer was referred to other sources, it was usually to an appropriate research association, trade association, or leading manufacturer in the field.

As might be expected, editors tend to refer technical queries about contributed articles (C) to the authors concerned, by either giving the enquirer the author's name and address or forwarding the enquiry with a covering note. However, about one-third of the editors interviewed were prepared to sort out any problems themselves, by discussing them with the authors and then sending the results to the enquirer.

Only 63 per cent of the journals had technical articles written by the editorial staff. Enquiries relating to these articles (D) were usually dealt with by the editors concerned.

About half of the editors were able to answer marketing enquiries (E), by either giving a personal opinion of the state of the market or providing relevant statistics if these were readily available. Some journal editors were prepared to work out statistics if they were themselves interested or if the enquirer was particularly influential (a large manufacturer, for example). Very little help was given, though, if the enquiry came from a market research organization! Where the editors could give no help, the enquirers were usually referred to the Department of Trade and Industry, or an appropriate trade organization.

Peripheral enquiries (F) were referred to other sources by the majority of editors, usually to other trade journals which covered the field of the enquiry. A few editors, however, attempted to give some information before referring the enquirer elsewhere.

Several of the editors interviewed commented that knowing where, or, more often, whom to get information from is an important function of the trade journal editor. Putting people in touch with each other is what the editor can do best, since he is usually in close contact with the field in which he is working. On the whole this type of service is not very time-consuming as it only takes a few minutes for one or two telephone calls. It may save considerable time spent searching, and may be more effective.

(*iii*) *Time and effort spent on readers' enquiries by trade journal editors*

Table 4 shows how much time editors are prepared to spend on one enquiry. The figures refer to the percentage of journals in the sample.

TABLE 4

up to 5 mins	*up to 15 mins*	*up to 30 mins*	*up to 1 hr*	*up to half a day*
9	25.5	25.5	28.5	11.5

It can be seen that most editors are prepared to spend between fifteen minutes and one hour on an enquiry if necessary, though they could not possibly do this for every enquiry. Most editors also stressed that on very busy days during the month, such as press day, they would not be able to spend any time on enquiries, so the enquirer then would either have to wait or go elsewhere.

When faced with an enquiry on a subject about which they did not know a great deal, 43 per cent of the editors were prepared to undertake a considerable amount of research to find the answer. The sources they used included back numbers of the journals concerned, personal contacts within the industry, research associations, professional institutions, and national libraries. Thirty per cent of the editors interviewed were prepared to do some research. Twenty-seven per cent would do very little, although about half of these would do research if an enquiry was interesting from the journal's point of view, that is, if it would lead to good copy material that would interest the readers *and* advertisers. Indeed, most of the editors added that they were more inclined to find out the answers if they felt they would lead to good stories.

Detailed answers were given to enquiries, when required, by 57 per cent of the editors interviewed. A few editors were prepared to give detailed information which otherwise would have been charged for by a consultant, but this was exceptional, and most editors stopped short of consultancy-type information. Thirty-four per cent of the editors would not give detailed answers, either because they did not have time for this or they did not feel it was part of their job. A few editors, about 9 per cent of the sample, would give details only if the enquiry was interesting and therefore followed up for copy.

(*iv*) *Specialised information services provided by subscription trade journals for their readers*

(*a*) *Enquiry bureaux.* Nine of the sample journals (25 per cent) provided some kind of information service specifically for their readers, which came under editorial administration. Usually a member of the editorial staff was in charge of the service, either full- or part-time, and in some cases clerical staff were also employed as assistants. Four of these services dealt with trade and technical information. They used trade directories and handbooks, card indexes of trade information compiled 'in house', their own editorial staff, and outside technical consultants as sources of information. Three of the journals had trade information services only. They used mainly trade directories and their own card indexes to answer enquiries. The two remaining journals offered mainly technical information services. They paid outside technical consultants to answer the enquiries, sometimes using the information given as copy for the journal.

One large publishing house is considering setting up a central information bureau for dealing with all readers' enquiries which come to any of its trade journals, since most of these can be answered from standard directories or published material in the journals. The information bureau would also receive copies of all press-releases received by the journals in the house, to keep them up to date. There are two factors against this scheme at present. One is the money needed, and the other the organization involved in setting up such a system.

(*b*) *Enquiry card services.* Known affectionately in the trade as 'bingo cards', the purpose of these is not to help the reader, but to promote advertising in the journal; 34 per cent of the subscription journals in the sample used them. Most of these had introduced them to compete with controlled-circulation journals. The enquiry card service is usually administered by the journal's advertising department, and the cards are processed either by computer or, more generally, by clerical staff. The onus is upon the manufacturer concerned to supply information to the enquirer. The main disadvantage of the system is that it is slow; if cards are handled by computer, it takes about two weeks to obtain the required information, but if they are processed manually, the time-lag is lengthened to five weeks (this assumes that manufacturers are prompt in dealing with these enquiry cards!).

(*v*) *Records kept of reader's enquiries*

Most editors filed written enquiries with their normal correspondence, though a few tried to keep them separately, with their answers, because they found them a useful reference for future enquiries. Generally, records of telephone enquiries were not kept. Some editors had tried pre-printed forms for recording these, but found that it often took longer to fill in the form than to answer the enquiry, so the systems were dropped. Usually the enquirer's name and number were scribbled down on a scrap of paper, and one of the greatest hazards an enquirer faced was that this paper would then be lost!

(*vi*) *Trade journal editors' attitudes towards readers' enquiries*

One editor commented, while being interviewed, that a journal's attitude towards readers had changed over the last few years. Ten years ago answering readers' enquiries was considered as an essential part of an editor's job, but nowadays this was not so. However, out of the editors interviewed in this survey, 43 per cent still regarded readers' enquiries as important. Half of these thought that the enquiries themselves were useful, because they showed which areas the readers were interested in, and therefore indicated what would make good future copy. The other half felt that answering enquiries was still an important service for the readers, and good for the journal's public image. Asked whether they differentiated between subscribers and non-subscribers when answering queries, 80 per cent of the editors interviewed said they did not usually make any distinction.

The majority of the editors interviewed were very pleasant and helpful, though a few (about 15 per cent) were somewhat off-hand. So much depends on the personality of the individual editor, that whether an enquiry is answered or not may depend on who picks up the telephone in the editorial office, also on what mood he is in at that moment. Much depends on the personal interaction of the editor and the enquirer; if the enquirer sounds bright and pleasant, he will be more likely to get an answer.

(*vii*) *Controlled-circulation trade journals and their readers' enquiries*

As only five of these journals were included in this survey, it was not feasible to analyse the results of the interviews in the same way as those of the subscription journals. However, by looking at the information obtained on these journals, it was seen that on the whole they are very similar to subscription journals in the type of enquiries they receive and how they are prepared to answer them. Trade enquiries are again the most numerous, and technical and marketing enquiries are also received. The editors were usually able to answer trade enquiries, either from their own knowledge or from directories. Three of the editors were technically qualified, and therefore able to deal with technical queries. This they were usually prepared to do, as long as they were 'genuine' enquiries (that is, not from consultants). The other two editors could only refer the enquirer to other sources. Most of the editors were prepared to find the answer to an enquiry which they did not know, and to give some details if required, providing that they had time to do this. One editor regarded readers' enquiries as a thorough nuisance, and did not feel inclined to answer them as the readers did not pay for the journal. Another editor was interested in his readers and their enquiries and regarded answering them as an important part of his job. Therefore it seems that, when it comes to answering enquiries, the personality and attitude of the editor is more important than the commercial basis of the journal.

Conclusions

With respect to the enquiry services of paid-circulation journals, the results of this survey have brought out the following points. Generally, the majority of the enquiries received are telephoned, and require trade information. Editors can answer these enquiries most readily. Technical enquiries can be dealt with successfully by about half of the editors interviewed. Out of the enquiries relating to journal-published material, those referring to editorial articles are usually handled by the editors concerned, whereas those referring to contributed articles tend to be referred to the contributing authors. Enquiries for marketing information can again be answered by about half of the editors interviewed, usually those whose journals aim to cover the marketing aspects of their fields. Peripheral enquiries tend to be referred to other trade journals.

Most of the editors are prepared to spend between 15 mins and 1 hr on an enquiry, if necessary. About half of them are prepared to do research to find out answers to enquiries, and will give detailed answers when they are required. In spite of the changes that have taken place in commercial publishing, just under half of the editors interviewed still consider that readers' enquiries are very important, and nine of the sample journals provide some type of specialized enquiry service to deal with them. One important part of the editor's service to the reader is being able to put him in touch with people who can help, since editors are usually up to date and well informed in their fields, and know most of the appropriate sources of information. The degree to which an editor will help an enquirer depends largely on his personal attitude (whether he enjoys answering enquiries, for example), and also on the time he has available and whether he thinks that the enquiry is 'genuine'.

The results of the interviews with controlled-circulation journal editors were very similar to those of paid-circulation journal editors, and indicate that the personality of the editor, not the commercial basis of the journal, is the important factor in answering enquiries. However, the sample number here was too small for any valid conclusions to be drawn, and further work along similar lines to this survey could be done for controlled-circulation trade journals.

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Map conservation in an academic geography department

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Time-saving procedures and avoidance of material replacements due to damage and loss are the problems which must be appreciated in an academic department administering a collection of maps. The system adopted by this Geography Department, after much preparatory thought on issues of policy and administration, has proved that such problems can be obviated efficiently. Backlog of work inevitably builds up periodically, but opportunities to cancel this regularly occur during vacations. The capital expenditure is a long-term investment, but the outlay per cabinet is a reasonable amount for a thousand maps, which will not depreciate appreciably for many years. This would not be so with maps kept in drawer units of wood or steel, where one would also need more floor-space. The criterion is, therefore, to file vertically all maps and atlases possible, in the same way as a book library. This short paper deals with the various operations in administering such a collection.

Introduction

THE FILING of the many series of maps required for academic purposes has in the past presented a service problem to a map curator. Apart from the ever-changing requirements of staff and students for maps covering general and regional areas, of a wide range of scale, and of a variety of theme, the overall problem is one of location and accessibility of the material required. This article is concerned with the system of map and atlas conservation in the Geography Department at the University College of Wales, Aberystwyth, where the reference collection well exceeds 50,000 sheet maps, apart from some 10,000 available as class sets for tuition purposes. Apart from the internal requirements of staff and students, facilities are extended to other departments and to *bona fide* consultants. Requests are, therefore, unpredictable, not only with regard to speed, but also with a minimum amount of damage or deterioration to the maps, at a time of rising costs and curtailment of available finance.

Progress in map publication is today accelerating by reason of new production techniques. More and more thematic series are being offered, and topographical revisions are taking place at shorter intervals to accommodate environmental developments, while scale metrication has already come into being. Therefore, accessions to a map library must be constantly assessed in the light of these ongoing changes, subject to the constraints of finance, and with an eye to possible future requirements.

Sheet maps alone do not constitute a map reference library in the academic context, but one must also include a collection of wall maps used in the lecture room, a collection of class sets of sheet maps for practical class work, a range of atlases (maps in book form) which are a necessary adjunct to the sheet maps, a collection of air photographs, becoming increasingly more important today as an accompaniment, and finally a reading library of reference bibliography relating to geography and containing specialist maps.

While there are various schools of thought regarding policy as to the optimum correlation between these sections, whether they should all be under one central control or as separate units, a general compromise is in practice here in which the administration of each is undertaken by one staff member, with or without assistance. Furthermore, building layout precludes the housing of all within one room, yet they are easily interaccessible and present no problems of delay or availability of material.

Reference will be made later to regional maps and scales, but a note at this point is befitting. Where complete coverage for each country is available or forthcoming, this is obtained, but in addition special areas are also acquired as demanded from time to time by the teaching curriculum. Often the choice of scale depends on publication output but a practical general scale is around 1:50,000 comparable to the Ordnance Survey One-Inch Series, or 1:25,000 is chosen, with special study areas of 1:10,000 or less. Ordnance Survey publications for Great Britain command the widest range, and the Department is fortunate in being in close proximity to the National Library of Wales, where maps for the Principality are received by copyright. To provide for the few contingencies where no map is available within its own series, all published sheets of the 1:1,000,000 International World Series have been acquired. This acts as an 'insurance' against an otherwise abortive request, and such a scale, where one inch equals sixteen miles, is in its own right extremely useful and highly informative.

General routine

Sheet maps are usually sent rolled by the publishers. After checking and rubber-stamping with the identifying departmental address, the maps are flattened by laying on a cold, flat surface and weighted down by steel bars, which have been cut into varying lengths up to 4½ ft and 2½ × ½ in. in section, bound with billiard-table cloth for the protection of the maps. They will normally be flattened in two days, and the uncontrollable curling is corrected for filing. Sorting into numerical order is then done, and the sheet numbers marked off on the appropriate series indices which are themselves filed in country order. Every possible index should be obtained, whether for old, obsolete or current series.

Equipment

(a) Card index

All maps should be card-indexed, not only to provide a record of what is in the collection, but to act as a location index to the cabinets, and to furnish the details of the series, whether complete or expanding, and whence required. Roneo-Vickers card units are used, each containing 12 trays of 70 pockets each. The design of the card, initially drawn up by the Department, has 100 boxes for map numbers in the series; continuation cards can be used if that number is exceeded. An empty box thus indicates a missing or unpublished sheet. When fitted into the tray pocket, the bottom margin of the card shows the area, scale and subject at a glance. As an example, a street plan of Paris would be under 'EUROPE regional: France regional (Paris): 1:10,000: town plan'. The scale ratios are arranged in descending order from 1:30,000,000 or more to 1:10,000 or less, proving most useful in locating maps of particular scales required by consultants. Incidentally, coloured tabs can be obtained as an added visual aid to topics, *e.g.* green for agriculture or land-use, brown for geology or soils, blue for hydrology or marine. Preponderance of topographical maps does not, however, warrant the use of any colour. Unless each map is at this stage entered on the card index, there is a subsequent grave risk of its loss of identity, and the record is rendered useless from the consultant's and curator's points of view. In the interests of clarity and uniformity, the cards should be typed, preferably by the curator who is *au fait* with map details.

(*b*) *Filing cabinet*

There are several ways of storing maps, and none more widely prevalent than in drawers. But let it be said at the outset that this method is highly unsatisfactory in a departmental collection of this magnitude. Only where each drawer contains a number of copies of the same map is it practicable, as in class sets, and even then, steel drawers on bearings should be used, as wooden ones tend to sag under weight. But even so, unless the maps are weighted down in some way, they tend to creep to the back on closing the drawer, resulting in dilapidation or creasing. The major criticism in a map reference is that the majority of requests seem to be for a map towards the base of the pile which necessitates the removal of those overlying it and a repetition of the process on returning it, involving far too much time and deterioration risk.

Therefore, in such a map library, there is only one system which allows free access to any one map in any series, which is to hang the maps vertically with their titles and/or numbers at the top, as is done by the Royal Geographical Society and a few others. Division cards, on which basic data and information topics and scales are shown, can be inserted between each series, obviating recovery problems. On removing a map, a coloured plastic square can be inserted in its place until returned.

The most satisfactory vertical cabinet which meets the convenience of this Department, is from the range of models supplied by Messrs M.B. (Office Equipment) Ltd, Elite Works, Manningtree, Essex. It is found that those with a pull-out rack-holder are preferable to the spring-loaded lid type. With the former, provided there is a 3 ft space in front of the cabinet (*i.e.* 2 ft for pull-out and 1 ft for the operator), there are three advantages, (a) the flat top of the metal cabinet can be used for table space and also for flattening the rolled maps already referred to, (b) if the titles or numbers of the maps are on the side of the hanging map, they can be read, and (c) if a sheet is inadvertently dropped, it is immediately recoverable. None of these advantages occurs with the lid-type.

It is found that the eight-rack cabinet is the ideal model, as up to 1,000 maps can be hung, depending on the thickness of map paper and whether large sheets have to be folded to less than cabinet width. The majority used are 38 inches wide but, in practice, a 59-inch wide cabinet is even more convenient for such wide maps as the O.S. Ten Mile to the Inch Series, Admiralty Charts, U.S.A.

1:24,000 Metropolitan Area, and the 25-inch O.S. 1:2,500 County Series.

The racks themselves slide freely on runners and can, if the necessity arises, be lifted out at the back or front. Each is opened, jaw-like, firstly part-way to release the packed pressure and to allow the required sheet to be selected and then fully opened for extraction. Details of contents can be displayed on the outside cabinet face and on the rack margins to help the user. The cabinets are numbered, and a plan of the Map Room is displayed to show where each cabinet stands and its general contents.

Edge binding

As a pre-requisite for hanging maps, the upper edge must be strengthened, as paper in time would become torn. This is done by a hand-operated machine fixed to the edge of a working table. The transparent tape supplied for this purpose does not deteriorate over time by becoming brittle, discoloured or peeling off, and is sufficiently tough to tolerate map weight and handling. Some maps are too wide for the cabinet, in which event the maps should be folded before punching, so that the double holes coincide.

Perforating

After edge-binding, the map is passed to a complementary machine which punches the perforations to coincide with the hooks in the cabinet racks. Care should be taken to avoid fouling which occurs if the first hole is too far from the end of the rack.

Some published maps are found to have little or no top margin, and if these are passed through the machines, the perforations would remove information. Consequently, in these instances, a pre-punched manually applied tape is obtainable to deepen this margin. Both machines and tapes are supplied by the same firm. A butting edge can also be affixed by adjusting the tapes on the binding machine, but, unless a whole series is involved, it is hardly worthwhile to do so for odd maps.

Apart from the class sets, a few exceptions to vertical filing are made, chief among which are the 1:25,000 O.S. These receive steady use in this Department, and it has been found more convenient if the maps within each grid square are bound in folders by ring-clip in numerical order from 00 to 99. The ring-clips assist in the insertion of revised editions. Other exceptions are historic maps or first editions whose value would be considerably reduced if bound and punched.

There is also the question of storing in an orderly and accessible manner the miscellaneous sizes of rolled wall-maps. For the same reason that sheet-map series are not stored horizontally, wall-maps are hung vertically. To do this, a framework of Handy Angle has been fitted within an alcove. As received the rolled wall-map is fitted with a special Rigid Map Hook (made by Westermann of Germany, and supplied by Grant Educational Co. of Glasgow). This type of hook is in two halves, one being screwed to each of the wooden roller ends, so that a wing-nut can lock the two halves together after use. The flat hook can then slot into the perforations of the Handy Angle frame and the map hangs vertically. If a number is given on the linen back of each map as it hangs—at eye level—the identification is simplified. This is a far better system than laying the maps horizontally on brackets, where identification is hampered and sagging occurs.

Such a system has proved itself in that the usual run of requests is for maps within a regular series, which can generally be found at once; but even the more unusual requests are found within minutes, by reference to the card index to obtain the cabinet and rack number, and the appropriate publication index of the series on which the sheet number for the required area is found.

In short, a complete stranger to the map library could without undue trouble locate by this system any particular map, which may be illustrated by the following stage-by-stage procedure:

1 Map required; 'REDON' at 1:100,000. (This place is chosen as it is not readily recognized as in any particular country.)
2 The *Columbia Lippincott Gazetteer of the World* (p. 1565) shows REDON as being 32 miles S.S.W. of Rennes in W. France.
3 The card index for France 1:100,000 shows that the sheet location index is in the *Carte de France Catalogue* Sect. B, p. 24.
4 On this, the REDON sheet is numbered E 11.
5 Box 24 of the card index shows this map to be present, and to be found in cabinet 5, rack 4.
6 Cabinet 5 is located from the Map Room plan.

In practice, anyone familiar with procedure can bypass some of these stages. As an extension to this request, the enquirer may also ask for a geology map of the same area. The card index will show that, although a map on the same scale is not available, there is a series at 1:80,000 and that its index is on Tableau d'Assemblage A of the *Catalogue des Cartes*. On this the REDON sheet is No. 90, to be found in cabinet 5, rack 6.

Furthermore, efficiency and smooth-running is also enhanced by the fact that the map room is administered as one self-contained unit through the curator who deals with all the relevant correspondence and ancillary facilities. It is a system which has removed all undue delays, embarrassment and damage to maps, and which can be carried out single-handed. Used material can be returned to file far quicker than would otherwise prove to be the case, and more consultants can be accommodated, even without the added responsibility for the considerable atlas and wall-map sections.

Management advisory services for the small firm

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Sheffield Centre for Innovation and Productivity,
Sheffield Polytechnic

This paper was to have been presented at an Aslib evening meeting which had to be cancelled

Introduction

THE SUBJECT of small firms has aroused increasing interest in recent years, particularly since the Report of the Bolton Committee of Inquiry on Small Firms, published in November 1971. On one topic, namely, management advisory services for small firms, there are conflicting opinions about the need for such services, the type of service, the methods of operating and staffing and the financial implications.

The Bolton Report took a firm view that management services for small firms could be provided by the private sector and that the role of the Government should be limited to 'signposting' with sources of direct assistance. But can a management advisory service specializing in small firms be commercially viable? What sort of service should it offer? How should it be staffed? How should it charge for its services? These and other questions need to be answered, preferably by those with practical experience in the field.

Small firms and their management needs

Small firms loom large in the national economy. In manufacturing over 90 per cent of the 90,000 establishements employ fewer than 200 people each. Between them these small firms employ nearly a third of the manufacturing labour force. In other industries, such as retail trades, motor transport, motor trades, building and construction, hotel and catering and miscellaneous services, small firms play an even bigger part. In Britain there are at least a million small firms employing, all told, over four million people.

Research by the Bolton Committee established that the average owner-manager is in his mid-fifties and that the majority of these chief executives have no formal post-school educational qualifications. The typical small firm is directly managed by one or two men who run the business on experience and common-sense. This feature is both the strength and weakness of the small firm. At best it gives quick decisions, high morale, flexibility and a concentration on survival, profit and growth. At worst it means under-utilized resources, poor working conditions, too many small firms in the wrong market, and a high rate of insolvencies.

It is widely believed that the general level of management in small firms is

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low, though there are many exceptions. However, even the brilliant ones cannot be entirely self-sufficient. The small firm by its very size is prevented from employing full-time specialists in every function. Yet the need to keep abreast of new ideas, new methods, new materials and new markets is as great in the small firm as in the large, and perhaps greater.

The Bolton Report revealed eight main areas in which small businessmen could improve their performance, namely, finance, costing and control information, organization, marketing, information use and retrieval, personnel management, technological change and production control. Of course, these management shortcomings are not confined to small firms but whereas the large firm tends to be over-burdened with problems of organization and administration the owner-manager trusts too much to instinct and individual flair.

Perhaps the most important feature of the whole problem of management services for the small firm is the reluctance of the owner-manager to use specialist advice. There is partly a lack of awareness of existing facilities but also a sheer hostility towards anything that smacks of outside interference. The latter reaction may be due in part to the instinct for independence but the owner-manager is quite right in being suspicious of many of those who claim to be able to help him, ranging from the downright charlatans to the well-intentioned experts whose experience has been confined to large firms and who are a positive menace in small firms.

The end result is that the few who can genuinely help have to overcome a barrier of suspicion which inevitably increases their selling costs. And since one of the complaints about management consultants and advisory services is the high fee rate, a vicious circle develops. The greater the sales resistance the higher the cost of selling which in turn pushes up the price thus generating greater reluctance, and so on. How can this circle be broken? To find an answer we must look more closely at the kind of services needed and how they could be provided.

What kind of services?

The Bolton Committee rightly pointed out that the only sensible reason for making use of any service, from the businessman's point of view, is that it is likely, directly or indirectly, to increase his profits; if it does not, time spent on it is wasted. (They could perhaps also have recognized the need for some small firms to learn the elementary rules of business survival. There is a need to reduce the high rate of insolvencies not in order to bolster up the dying firms but to reduce the infant mortality rate of the potential high flyers.)

It is not generally recognized, even amongst professional managers, that there are only a limited number of ways of improving profitability, *i.e.* the rate of return on capital. These methods can be grouped into four categories:

1 Raising prices,
2 Reducing costs,
3 Improving the product mix,
4 Increasing throughput.

In any business at any given time one or more of these approaches will be appropriate and it is part of the art and science of management to decide the most suitable course. The role of the management adviser in the small firm is to help the owner-manager select the appropriate course and/or to assist him to implement the right actions.

In practical terms, the service should start with a systematic and thorough survey of the whole business, taking a realistic view of the company's strengths and weaknesses in order to recommend acceptable courses of action to improve the health and efficiency of the enterprise. From such a survey, or from the proprietor's own analysis, may spring a need for help in, say, marketing (to raise profit margins or to increase sales volume) or in production (to reduce costs and/or increase throughput) or on financial matters (to establish reliable costing data or simply to prevent the firm running out of money) or on the personnel side (to strengthen the management structure for the long-term profit).

What must be avoided at all costs is the narrow approach of the functional specialist who is capable only of seeing the problem in his terms and propounding the application of his pet technique.

Considerable damage has been done to small firms by experts who, though they may be very good at helping big firms, are worse than useless in small firms. A simple example is the widespread application of work study by experts who do not appreciate that, whereas in big firms work study can be a good technique for reducing direct costs, in small firms it can cost more than it saves. The value of work study in small firms is mainly for improving capital circulation. This inevitably means coupling work study with marketing, costing and financial controls. Few experts, let alone their small firm clients, appreciate this.

Another example is the application of budgetary control. This management technique, widely used in large firms, is dangerous if applied in the same manner in small firms. It leads to proliferation of unnecessary paperwork and the production of outdated information of limited use. Yet what many small firms need is a simple system for planning and controlling their future profitability. This is what budgetary control can do for them if properly applied.

Similar examples exist in the field of management training where many of the Industrial Training Boards have insisted, for grant purposes, that small firms should follow the recommendations of the Central Training Council with its emphasis on job specifications, training records, etc. The CTC's recommendations were based on research carried out in big firms. Fortunately, some of the ITB's have recognized that running a small firm is a very different process from management in a big firm.

The critical question is how much assistance the small firm can afford. In a manufacturing firm with 200 employees it is well worth paying fees of, say, £10,000 if, as a result, the pre-tax profits are increased by, say, £20,000. But these larger small firms are the exception rather than the rule. In a firm with 20 employees a full-time consultancy operation to achieve proportionately similar results will take more than one tenth of the time required in the firm with 200 employees.

So the smaller firm requires a different style of consultancy, much more on a 'do-it-yourself' basis. Quite apart from the cost, the owner-manager of the small firm cannot afford the time to absorb all the benefits of a full-time consultancy assignment. He needs someone who can spend a few days initiating the new ideas and procedures and who can visit periodically—once a week or once a month—to keep them on the right lines.

What kind of people?

From the foregoing comments about the type of service required and the dangers of the narrow approach, it follows that the people required to carry out the role of management advisors to small firms are not the highly qualified specialists in particular techniques, nor the whizz-kids fresh from college, nor the mature middle managers who have led sheltered lives in large organizations. Instead it needs people with an unusually wide experience of management, preferably with direct experience of running a small firm, and, above all, the ability quickly to gain the confidence of the owner-manager and his staff.

People with such qualities and experience are rare and have a high market value. The Management Consultants Association recognized in their evidence to the Bolton Committee that only the senior management consultant with wide experience can fulfil this role. Other organizations such as Industrial Training Boards, Productivity Associations and Trade Associations have found it difficult, if not impossible, to attract the right calibre of staff for dealing with small firms.

Unfortunately too, there are very few formal facilities for people to learn about management in small firms. Big business has been critical of the efforts of the business schools and academic institutions but the small firm has been virtually ignored in the field of management education.

The small firm must be protected from both the charlatans, selling new clothes to emperors, and also the well-intentioned experts who do not recognize their own limitations. To some extent such protection is provided by the Institute of Management Consultants and by the Management Consulting Services Information Bureau operated jointly by the British Institute of Management and the Confederation of British Industry. However, the operations of the IMC and the MCSIB are on a very modest scale. The MCSIB is little used by firms outside the London area. The IMC has established a body of knowledge and identifies the competence of its members in one or more of the fields of production, finance, marketing and administration. Should it also more clearly identify which of its members are competent to assist small firms?

The financial implications

Most organizations setting out to provide a service are governed by the inexorable law that, in order to survive, the income from the sale of the service must exceed the cost of providing the service. The costs can be divided into two types.

First there are the direct costs of undertaking the service—the salaries and expenses of the people undertaking chargeable work. Second there are the indirect costs of administering and marketing the service—the salaries and expenses for work which is not directly chargeable to the client. The cost of the first kind of work is directly proportional to the amount of service provided in terms of man hours. But the second type of cost is more closely related to the number of customers and the number of orders.

It is well recognized in many businesses with large numbers of customers that 20 per cent of the customers provide 80 per cent of the turnover. It soon becomes clear that one of the ways of maximizing profit (or reducing costs) is to concentrate on the big customers. Salesmen are told to stop calling on the small fry where the potential turnover is too small to cover the cost of selling. Product ranges are 'rationalized' by cutting out items with small turnover.

Many service organizations in such diverse fields as management consultancy, research associations, industrial training boards, and educational establishments have found that they cannot afford to devote much time to the small firm because the costs of administration and selling, in relation to the chargeable time, are much higher than with big firms.

Thus, left to market forces, the small firm will be neglected. Only where there are artificial restrictions can these market forces be resisted. It now becomes clear that the task of providing management services to small firms cannot be left to private enterprise because inevitably, sooner or later, a private service, seeking profit, will gravitate its services to the larger firms.

The larger companies of management consultants recognize the essential truth of this phenomenon and rightly concentrate their attention on the large organizations, though they do undertake some work for small firms. There are, of course, some independent consultants and small partnerships who cater for small firms on a local basis. Their selling costs are low partly because they have low overheads but also because many of their clients are contacts developed when the consultant worked for another organization. Few of them can afford to train new staff.

Must the service be subsidized?

The Bolton Report argued that all management advisory services, whether public or private, should be self-supporting. Yet, as we have seen, left to the forces of the market, private enterprise will tend to steer clear of the small firms. Also since the needs of large and small firms for management services are radically different, both in terms of the type of service and the qualifications of the staff, it would seem that private enterprise services cannot be expected to concentrate on the small firms.

One thing is certain. Any sizeable organization serving the needs of small firms must be restricted from assisting large firms. The restriction may be either by legislation or through a controlling body representing the interests of small firms.

There are conflicting views on whether such a service is commercially viable. Much depends on the selling costs of the organization. Fundamentally, the operation of running a consultancy company can be simulated in a simple mathematical model taking into account such variables as the average length of assignment, the ratio of enquiries to surveys and of surveys to assignments, the ratio of time for supervision, training, sickness, gaps between assignments, and so on. A formula can be established from which it is possible to demonstrate that given the level of salaries required to attract and retain the right calibre of staff and given also the fee level which small firms regard as reasonable, an average assignment length of less than three months and a sales conversion ratio lower than one enquiry in four, will inevitably mean that the service cannot break even, let alone make a profit.

The proof of the pudding is in the eating. Neither in this country nor abroad has any sizeable organization serving small firms succeeded in surviving without subsidy from one source or another. If this is so, is the subsidy worthwhile and where should it come from?

The case for subsidy

The Bolton Committee dismissed the idea of subsidy, other than for an information service, on the grounds that the economic benefit to the nation deriving from the services would be less than the cost.

However, the argument overlooks the fact that the methods of measuring economic benefits are either non-existent or misleading. For instance, it is recognized that people working in small firms are happier than those working in large firms. Moreover, big organizations restrict consumer choice by cutting down product ranges and charging high prices for 'specials' which a small firm, with its low overheads, could provide economically. The frustration of the ordinary citizen trying to seek satisfaction from the big organization, be it private or public, is rife.

Yet no attempt is made to assess the true costs of small and large firms in economic terms. Quite apart from the obvious direct support of large firms (Rolls-Royce and Upper Clyde Shipbuilders) there are more subtle subsidies. What is the cost of strikes, both official and unofficial, in large firms? What proportion of the police force, the civil service, the health and educational services etc., are devoted to the needs of large and small firms respectively?

The truth is that the big firms get the lion's share of Government aid not only in direct grants but also in such subsidized fields as management education, research and development etc. Small firms, far from being the lame ducks, are supporting the big firms through these hidden subsidies. The Government, albeit unintentionally, is distorting the economy in favour of big firms, yet the Bolton Report indicates that small firms are no less efficient than large firms.

Thus the case for subsidy is that small firms should at least receive their fair share of any general subsidies to industry and commerce. Small firms and their employees pay their fair share of taxes and surely are entitled to a fair share of the benefits. It is wrong to argue that small firms are at fault in not taking advantage of existing subsidized facilities. All too often, the facilities are totally unsuited to the needs of small firms. We cannot blame research associations and educational establishments for concentrating on large firms; they are only minimizing their selling costs. In any case, they are staffed in the main by experts from big organizations who do not understand the needs of small firms.

Requirements of a service for small firms

The conclusion we can draw is that a management advisory service for small firms has three essential requirements:

1 It must be staffed by people who are competent to tackle the problems of small firms and who can establish confidence by demonstrating their competence.
2 It must be artificially restricted from assisting large firms, other than on a very limited basis.
3 It must be subsidized until the service is so well established that its selling costs can be reduced to a negligible proportion.

There is very little hope that any new, independent service could establish itself in this field because the initial selling costs would be so high that the service would be priced off the market.

One way to keep selling costs low from the start would be to take advantage of established links with small firms. (The initial success of the National Union of Manufacturers' Advisory Service Ltd (NUMAS) was due to its link with the National Union of Manufacturers whose members had confidence in the advice of their local secretary. Once the link was broken NUMAS found it more difficult and expensive to break new ground with small firms.)

Existing links with small firms

The Bolton Report reviewed the various organizations already linked to small firms and considered these under several headings, namely:

1 Accountants, solicitors and bank managers,
2 Trade associations, chambers of commerce etc.,
3 Educational establishments,
4 Government-sponsored bodies.

The accountants were criticized by the Bolton Committee for not doing more, yet the Report states that 'it would be difficult for many small firms to meet the cost of the more active role we would like to see more accountants performing'. Certainly the accountants and solicitors cannot afford to subsidize such services and, in any case, few accountants and solicitors are qualified to advise on management matters outside the strict financial and legal spheres.

The joint stock banks could provide a service, but why should they? Their function is to lend money at economic rates of interest. The risk involved with any one small firm may be high, but spread over a large number of small companies the risks are minimal, especially since many of the loans are secured. The banks have no vested interest in making small firms more efficient except to create more and bigger borrowers. In any case, firms that can generate high profits may be less in need of loans.

The merchant banks and other sources of medium- and long-term loans have a greater interest than the joint stock banks in improving the management of small companies, because they often take an equity stake as a means of boosting the return on their investment. ICFC already have a management service, which now incorporates NUMAS, but they are bound to be more interested in the larger small firms than in the owner-manager with very modest loan requirements.

Some trade associations already run advisory services and most of these are subsidized. One of the weaknesses of many trade associations, chambers of commerce and similar bodies is that, owing to lack of funds, they have not been able to attract the calibre of staff capable of running a management service for small firms. The Bolton Report recommended that some of the smaller associations should combine in order to provide management services more economically. However, small associations, like the small firms they serve, value their independence.

Educational establishments came in for criticism in the Bolton Report, particularly the universities and business schools. The owner-manager looks more favourably on the polytechnics and technical universities some of which have established special facilities for small firms, notably Aston University and Bristol and Sheffield Polytechnics. The Bolton Committee felt that co-operation between small firms and educational establishments should be encouraged but the Government decision to withdraw grant from the Industrial Liaison Service seems likely to result in weakening the existing links.

Of the various Government-sponsored bodies, the main ones relevant to small firms are the Low-Cost Automation Centres, attached to Polytechnics, the now defunct Production Engineering Advisory Service, the British Productivity Council, whose grant is being phased out, the Manpower and Productivity Service of the Department of Employment, now concentrating on industrial relations, the Council for Small Industries in Rural Areas and the Industrial Liaison Service. Of these the last two were highly praised in the Bolton Report.

The Department of Trade and Industry is now setting up ten Small Firms Information Centres to act as a link between small firms and the various facilities available. It is difficult to see how such information centres can operate effectively and economically. There are already several bodies, linked to small firms, carrying out some of the functions of these Centres. It would seem better to strengthen existing links rather than try to forge new ones. Between them, the trade associations, the chambers of commerce, the local productivity associations and the Industrial Liaison Service have good connections with small firms.

What should be done?

Some authorities argue that the answer is to set up a Small Business Administration, akin to that operated successfully in the USA. But this apparently simple solution is unlikely to work here in Britain if only because small firms have a strong dislike of anything that smacks of Government interference or monopoly. A more practical solution could be achieved by the British genius for compromise along the following lines:

1 Find out the extent of the imbalance between large and small firms *vis-à-vis* the taxes they pay and the direct and indirect subsidies they receive. This task could be the responsibility of the Small Firms' Division of the Department of Trade and Industry.
2 Make it Government policy to ensure that small firms receive their fair share of the subsidies and also to ensure that the subsidized services are appropriate to the needs of small firms.
3 Establish the identity of organizations and individuals competent to advise and assist small firms. This task is already being carried out, to some extent,

by bodies such as the MCSIB and the IMC. What is needed are more pertinent tests. Even a written test paper occupying about two hours is enough to identify those who lack the necessary wealth of knowledge. Practical competence could be verified by checking with a random sample of past clients.

4 Make grants to a limited number of appropriate bodies, such as trade associations, educational establishments etc., to strengthen existing services and/or develop new services for small firms. (The Bolton Committee said that, if subsidies were to be given at all, they should be given to users rather than providers of services, as in the pilot scheme run in Bristol and Glasgow in 1968. The trouble is that this method is administratively unwieldy and expensive and also encourages the misuse of consultants who are competent only to help large firms.) Careful control must be exercised to prevent the grants being used for the benefit of large firms and to ensure that small firms are really benefiting. This control could be exercised through sample inspection.

5 Develop better communication between the organizations and individuals offering services to small firms. The results of research and development in one body should be made known to others in the field. The individual consultants and small partnerships could still compete with the subsidized bodies by obliging the latter to carry the costs of research, training and general publicity.

These proposals may seem radical and unorthodox, and of course objections can be raised about some practical difficulties. But the alternative is that unless some positive steps are taken to redress the balance now weighted heavily in favour of large firms, the decline of the small firms will continue.

Small firms do not need, nor do they ask for, special favours; they only require equality of opportunity to demonstrate that they can more than hold their own in competition with large firms. David slew the clumsy Goliath but even he would have found it difficult with his hands tied behind his back. Small firms, given the right facilities of management advice and assistance could enhance their vital contribution to the national economy.

Technical Note

Content representation in document titles: a case study with prostaglandin literature

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A total of 2,792 document titles published in a specialized subject bibliography entitled *The Prostaglandins* by the Upjohn Company, USA, was examined. There was a slight but significant increase in information content of the titles with time. Employing the Montgomery–Swanson method, it was found that about 80 per cent of the papers had at least one 'prostaglandin-term' in their titles. The data obtained in this study are compared with those obtained in earlier studies.

Introduction

THE TITLE of a scientific document or paper should tell what the document is about. However, it is from our experience we know that the document titles contain a surprising amount of information which may vary considerably in depth and quality, from the highly specific titles such as 'Calcifying panniculitis with fat and skin necrosis in a case of uraemia with autonomous hyperparathyroidism' to the general titles of review articles such as 'Antibiotic review'. The adequacy and appropriateness of titles alone as a means of accessing the subject content of scientific and technical documents have been questioned, tested, discussed, and reported in a plethora of publications. An overview of the earlier work in this area has been summarized by Stevens.[1] A quick review of the pertinent literature including some of the recent work reported in the post-Stevens era[2-18] leaves one with very little doubt that many more additional studies need to be carried out before we can arrive at any kind of generalizations on the extent of subject representation in document titles. Thus in an effort to evaluate the effectiveness of a keyword or descriptor in the title, from the viewpoint of document selection and information retrieval, it was considered worthwhile to examine the titles of a comprehensive collection of previously analysed documents on a specific biomedical subject of growing importance, namely prostaglandins. Prostaglandin is the generic name given to a new group of biologically active lipids which are widely distributed in mammalian tissues. Apart from their therapeutic uses in the induction of labour and in the termination of pregnancy, a huge body of research suggests that various members of this remarkably versatile family of substances may prove to be important agents for the treatment of hypertension, peptic ulcers, asthma, nasal congestion and prevention of thrombosis.[19]

Materials

The Prostaglandins, a specialized bibliography of published work on prostaglandins, produced and being updated periodically by the Upjohn Company, Kalamazoo, Michigan 49001, USA (available upon request), constituted the materials for this study.[20] This bibliography contains citations of full-length journal articles, letters to the editor, book chapters, abstracts of papers presented to meetings, editorials, papers from published proceedings of conferences and symposia, dissertations, reviews, and state-of-the-art reports. Citations are primarily arranged in chronological order of their publication dates, and the whole bibliography is accordingly organized into four sections or groups: 1933–69 (chronological order disregarded); 1970; 1971; 1972. A chronologically ordered supplement (October 1972) listing additional references to papers published during 1967–71 is appended to the main bibliography. Within each section, citations are listed alphabetically by author. Non-English titles are transliterated, sometimes translated into English with appropriate designations for the original language. This bibliography contains a total of 2,792 papers on various facets of research and applications of prostaglandins, their isomers, intermediates, metabolites, derivatives, and analogues. The year-wise distribution of the papers as they appear in the four major sections of the bibliography (after regrouping the papers from the October 1972 supplement into their appropriate chronological sections) is given in Table 1.

TABLE 1: *Distribution of papers in* The Prostaglandins *according to their year of publication*

YEAR OF PUBLICATION	NO. OF PAPERS
1933–69	1,062
1970	415
1971	661
1972	654
Total	2,792

Method

The method used was essentially the one employed by Montgomery and Swanson in their study of titles and subject headings in *Index Medicus*,[21] further clarified by O'Connor.[11] Each title in the bibliography was examined visually to see if the word prostaglandin(s), either by itself or in any combinations such as 8-isoprostaglandin, 11-desoxyprostaglandin, etc., and its synonymous terms like prostanoid(s), existed in the titles. Other inflectional variations, mostly for the non-English equivalents, such as prostaglandina(s), prostaglandiner, prostaglandinerin, prosztaglandinkutatas, etc., acronyms such as PG(s), PGA, PGA1, PGB2, PGF-α, PGF2-β, etc., and generic chemical names such as prostanoic acid, prostadienoic acid, etc., were also searched in the titles of the papers. If any of the above 'prostaglandin-terms' existed in the title, the paper was considered a 'hit' by the title search method and relevant to the topic of prostaglandins.

Results and discussion

Of the 2,792 papers in the bibliography, 2,229 had at least one prostaglandin-term in their titles. This constituted an overall frequency of 79.8 per cent of occurrence of such terms in the titles of the papers examined. In order to determine if there were any changes over the years in the practice of titling the prostaglandin documents by the authors to make them more informative to readers, the frequency of occurrence of prostaglandin-terms in the papers, as grouped in Table 1, was computed and is presented in Table 2.

TABLE 2: *Comparison of number and percentage of papers in* The Prostaglandins *that had at least one prostaglandin-term in their titles*

YEAR OF PUBLICATION	TOTAL NO. OF PAPERS IN THE BIBLIOGRAPHY	PAPERS THAT HAD AT LEAST ONE PROSTAGLANDIN-TERM IN THEIR TITLES	
		Number	*Per cent (approx.)*
1933–69	1,062	846	79.7
1970	415	322	77.6
1971	661	507	79.7
1972	654	554	84.7

The results of this study reveal that solely on the basis of title search with the 'prostaglandin-terms' one could recognize about 80 per cent of the pertinent documents. This figure approaches the 86 per cent match found by Montgomery and Swanson[21] when they compared document titles and subject headings in *Index Medicus*. The data obtained in the present study run almost in parallel to those of Miller[10] who found that title searching could retrieve four (*i.e.* 80 per cent) relevant MEDLARS references for every five (*i.e.* 100 per cent) retrieved by MEDLARS index term searching. The findings reported here also come very close to those of Windsor's[18] where the 'DOPA-words' occurred in 71 per cent of the titles examined. The 80 per cent retrievability of prostaglandin documents by the title words further compares favourably to the implications of Saracevic's study[13] which meant that with the help of titles alone users would be able to recognize about 66–75 per cent of the relevant documents. In general, therefore, if any comparison can be made, results of the above four studies exhibited trends that are in some agreement with the findings of the present study.

Another observation of this study is that the occurrence of the prostaglandin-terms in the titles of 1972 papers is noticeably higher, in a collective sense, than those found in the literature of the earlier years; this difference is statistically significant ($P < 0.0005$). However, no further year-to-year comparison could be made showing the difference in the occurrence of the prostaglandin-terms in the titles of the papers published during the period 1933–69, since they were arranged by authors and the chronological order of their publication was disregarded in the bibliography.

Conclusions

The collection of papers in *The Prostaglandins* would have been approximately 80 per cent complete, had this bibliography been generated from the open literature on the basis of a title search with prostaglandin-terms *alone*. Inclusion of such terms as 'cyclopentene', 'cyclopentanones', etc. in the interest profile might have retrieved some of the papers in the 20 per cent 'missed' category. But then the number of 'false drops' or the percentage of 'noise factor' would have been quite high, yielding an overall lower recall–relevance ratio.

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Draft definitions

Information and library needs, wants, demands and uses

MAURICE B. LINE
British Library Lending Division

The literature on 'user needs' has been confused by imprecise use of terms. In particular, studies have purported to be concerned with needs when they have in fact examined uses or demands. The following is an attempt to establish definitions.

NEED: What an individual *ought* to have, for his work, his research, his edification, his recreation, etc.* In the case of a researcher, a needed item of information is one that would further his research. There may be an implied value judgment in the way the term is used: need is usually conceived of as contributing towards serious rather than frivolous ends. However, a recreational need may be just as much a need as an educational need; the two may be in conflict—for example, popular fiction may be educationally harmful. The whole concept of need is inseparable from the values of society. A need may or may not be identified as a want; an identified research need would be recognized as a want, while an identified 'edification' need could well conflict with an expressed want. A need is a potential demand.

WANT: What an individual *would like* to have, whether or not the want is actually translated into a demand on the library. Individuals may need an item they do not want, or want an item they do not need (or even ought not to have). A want, like a need, is a potential demand.

DEMAND: What an individual asks for; more precisely, a request for an item of information believed to be wanted (when satisfied, the demand may prove not to be a want after all). Individuals may demand information they do not need, and certainly need or want information they do not demand. Demand is partly dependent on expectation, which in turn depends partly on existing provision of library or information services. A demand is a potential use.

USE: What an individual actually *uses*. A use may be a satisfied demand, or it may be the result of browsing or accident (*e.g.* conversation)—information recognized as a need or a want when received, although not previously articulated into a demand. Individuals can only use what is available; use is therefore heavily dependent on provision and availability of library and information service. A use usually represents a need of some kind, though, as stated earlier, one need may be in conflict with another (in the same way that the use of heroin may represent a psychological need but be harmful physiologically).

Uses can be partial indicators of demands, demands of wants, and wants of needs. Identification becomes progressively more difficult, from the 'hard' use to the often nebulous and unstated need.

REQUIREMENT: is a useful bridging term; it can mean what is *needed*, what is *wanted*, or what is *demanded*, and can therefore be usefully employed to cover all three categories. Many studies of 'needs' have in fact been studies of requirements.

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*Strictly, a need is a *necessity*, something a person cannot do without. But who is to say what is 'necessary', for himself or others? The statement 'he needs information' is akin to 'he needs a bath'—information, like washing, is usually helpful but rarely absolutely essential.

Letters to the Editor

Sir,

THE TITLES OF BIOLOGICAL PAPERS

At a conference of editors held at the Royal Society in November 1972 some surprising facts emerged concerning the reading habits of scientists. Apparently relatively few journals are scanned by scientists; there is little evidence that literature before 1920 is consulted at all, 90 per cent of the literature consulted being post-1950 and finally very few scientists read the papers in full even in their own field!

These figures were based largely on surveys in the medical and biochemical fields and are probably not applicable in many branches of biology, and are certainly not applicable to taxonomy. However, the facts that some 30,000 scientific journals are in print and that this number is doubled every 25–28 years does underline the need for some form of abstracting service. There is still no guarantee that those banes of life (to both editor and author), the synopsis, summary and abstract will be read, but there is one part of a paper that does have a very high chance of being read—the *title*.

In my early contact with editing I was taught, I think wisely, that the title should indicate, as far as possible, the range of content of the paper but that this function should be fulfilled as concisely as possible. Of course one has to use common sense in the application of this maxim which can be taken too far. This was a common fault early in the century when one could encounter such titles as:

> 'Five years' observations (1914–1918) on the Bionomics of Southern Nigerian Insects, chiefly directed to the Investigation of Lycaenid Life-histories and to the Relation of Lycaenidae, Diptera, and other Insects to Ants. By the Late Charles Ogilvie Farquharson, M.A., B.Sc., Aberdeen. Edited with a brief life of the author, by Edward B. Poulton, D.Sc., M.A., F.R.S., Hope Professor of Zoology in the University of Oxford, Fellow of Jesus College, Oxford. With a systematic and descriptive appendix by R. S. Bagnall, G. T. Bethune-Baker, Dr. T. A. Chapman, F.R.S., J. E. Collin, J. Hartley Durrant, F. W. Edwards, Dr. Harry Eltringham, D.Sc., M.A., Prof. J. Bronté Gatenby, D. Phil., D.Sc., Prof. R. Newstead, F.R.S., Prof. E. B. Poulton, F.R.S., Prof. F. Silvestri, Dr. J. Villeneuve, and Dr. James Waterston, B.D., D.Sc.'

Cobleigh, T., U.N.C.L.E., appears to have escaped acknowledgement! I have had occasion to refer to this paper and due to the complex use of editorial comments and authors' footnotes it is possible to obtain some splendidly pedantic bibliographical citations, *i.e.* '(*vide* note by Poulton in Villeneuve in Farquharson *et al.* 1922:519)'.

Titles in German journals of this period can be particularly delicious:

> 'Wissenschaftliche Ergebnisse der mit Unterstützung der Akademie der Wissenschaften in Wien aus der Erbschaft Treitl von F. Werner unternommenen zoologischen Expedition nach dem Anglo-Ägyptischen Sudan (Kordofan) 1914. VI. Diptera.'

Often the editors can reduce a submitted title without any loss of information but authors should try to avoid wasting an editor's time in this way. For example, the title 'Studies on the natural history and taxonomy of the Nearctic and Neotropical weevils (Coleoptera, Curculionidae)' could be reduced to 'The biosystematics of New World Curculionidae (Col.)'.

The tendency today is to brevity but while this is a reasonable aim, certain minimal information should be included in a title.

The class and order of animal or plant is given as a matter of course in taxonomic papers, but is frequently omitted from other papers and in some leading journals it is not possible to find a reference to higher taxa anywhere in the paper. I cannot believe that many biologists are sufficiently familiar with all groups to be able to place all generic names, and often with only electron scan illustrations or sections to go on, visual identification of the organism may be difficult. Sometimes the identification can be effected by the use of common names so that whereas a taxonomist would refer to '*Musca domestica* L.' in his title, a physiologist might prefer to refer to 'the housefly', a saving of three letters. However, this practice is in essence against the spirit and purpose of binomial nomenclature as an international convention. Some popular names such as blowfly cover many genera and species and can be very misleading. I think there is a case for using the scientific and popular (where there is one) names together for clarity to readers unfamiliar with the particular group concerned and this is now practised by many leading journals.

The reason for brevity is not just to economize on printing costs. Once in the literature a title has to be repeatedly quoted in lists of references, in bibliographies, on card indices, in computers, etc., and hours of scientific time can be saved at all levels by using a concise yet informative title. This of course also applies to the titles of the journals themselves, which range from *Publicaciones de Extensión Cultural y Didactica Instituto Nacional de Investigatión de las Ciencias Naturales* (World List abbreviation *Publnes. Ext. cult. didact. Inst. nac. Invest. Cienc. nat. B. Aires*) to *Gut* (the journal of the British Society of Gastroenterology). The World List and other systems of abbreviations can help here but only in saving *space* since hours of valuable scientific *time* are wasted by authors, libraries and editors (and/or wives/typists) in checking that the abbreviations used are in fact correct!

Titles can also be misleading geographically and this is common among taxonomic papers published in the USA, where a 'Revision of the family . . .' often means 'A revision of the *North American species* of the family. . .'.

Serialized papers can be a nuisance to editors and editorial committees, since an author often assumes that acceptance of part one implies acceptance of the series. Few editors are willing or able to commit themselves in this way unless the series represents an important line of enquiry when the author can usually be persuaded to amalgamate the series into a substantial paper to everyone's advantage. Often serialized 'papers' are a series of disconnected notes better published as such (or sometimes not at all). A serialized paper usually requires two titles, one for the series and a subtitle indicating the specific contents of the part. Of course the addition of 'part 38' or 'part XXXVIII' can be a subtle way for a prolific author to impress his reading public, but this is more easily achieved by writing or rubber stamping (the latter appears more casual) the opus number on the title page when reprints are distributed.

Finally there can be an element of humour in the titles of scientific books and papers. I list here some of my favourites and leave the reader to speculate, as I have done, which were conscious and which unconscious. To avoid any possible embarrassment, authors' names and journal titles are omitted.

'Necking behaviour in the giraffe.'
'Eigg Shells.'
'On the testes of the Gorilla (with 2 plates [!]).'
'Control of wild oats in Denmark.'
'Eighteen years in the Khyber.'
'Bottom deposits.'
'A West African stool with gold overlay.'
'Groins, an annotated bibliography.'
'Variation in the African Black Tits . . .'
'Scrotal asymmetry and handedness.'
'The peep order in peepers.'
'The post-abdomen of *Cinderella*.'
'Heat in the Harem.'
'Effect of mechanical injury on the preclimactic life of banana fruits.'
'The fig leaf and what lies behind it.'

Yours faithfully,
KENNETH G. V. SMITH

Sir,

Mr G. R. Cliffe's interesting paper on education and training (*Aslib Proceedings*, October 1973, p. 381–4) draws attention, once again, to the unsatisfactory situation in smaller special libraries. He is largely concerned to describe Unilever's admirable arrangements for training its new employees in library use but he says that to do this the library staff must itself be adequately educated and trained. It is possible to do all these desirable things in so large an organization as Unilever but, as he points out, many people in industrial libraries cannot undertake a full-time library education and their employers cannot release them for the LA's two-year (or even its one-year post-graduate) course. This is also true of many commercial, research, academic and institutional libraries. These, too, often cannot mount satisfactory in-service training schemes because the total information/library staff is too small.

They may release staff to attend part-time classes for the 'City and Guilds' Library Assistant's Certificate but entrance to this is ordinarily restricted to those who have two years' library experience (too long a qualifying period, in my opinion) and the syllabus is so wide and general that to many supervising Librarians and Information Officers it does not seem relevant, excellent though it is to show one type of library assistant how 'the other half lives'.

Short courses, as Mr Cliffe says, are important and useful. Aslib does a great job here and the LA, its groups and sections, the full-time Schools and other organizations often come up with something good; however, publicity and information are often not well co-ordinated. I have frequently advocated a central clearing house which might produce, several times a year, a listing *by subject* of librarianship and information work events of all kinds and could maintain a consultable record which would avoid duplication of effort. This could surely be provided jointly by the LA, Aslib, the Institute of Information Scientists and *OSTI*?

Finally, it seems likely that the LA will have phased out its own examinations by the end of the 1980s, if not before. I do not think that the demand for part-time education will have died by then (and the recent Russell Report on Adult Education advocates *increased* Government support for all forms of part-time study). May not this be an opportunity to frame a new, day-release, education-cum-training structure which would be directly relevant to the needs of specialized, particularly non-public, libraries and information services?

Yours faithfully,

A. E. STANDLEY

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25th November 1973.

BRIEF REVIEWS

TAPES 73: Proceedings of the first INSPEC tape workshop, 6–8th February 1973. London, Institution of Electrical Engineers, 1973. 111 pp. £5.00. (ISBN 0 85296 416 96 X)

The INSPEC Tape Services Workshop was held in London on 6–8th February 1973 and delegates attended from 13 countries. Individual users of the services presented papers, and INSPEC representatives outlined their operations, new developments and future plans. The papers covered: the SDI service of the Royal Institute of Technology, Stockholm; information retrieval from INSPEC tapes at the Central Research Institute for Physics, Budapest; INSPEC SDI service at the Atomic Weapons Research Establishment; CAN/SDI and the INSPEC Tape Services; a syntactic tracer organized retrospective enquiry system; information problems of a special library in a research establishment; and INSPEC's unified classification, indexing scheme and information services together with a proposed computer-based information system on mechanical engineering in collaboration with the Institution of Mechanical Engineering. All these papers are included in this volume.

CRAWFORD, J. W. M. *ed.*, Directory of city connections. London, Crawford Publns., 1973. 130 pp. £9.75. (ISBN 0 903684 00 4)

This directory is arranged in three separate parts. Part 1 comprises an alphabetical listing of over 630 companies with the name and telephone number of the principal stockbroker consulted by them and, where specified, the principal merchant bank consulted. The *Financial Times All Share Index* at 29th September 1973 has been used as the main source for the selection of companies included. Bank and investment trust groups have been excluded, while the F.T. Mining Finance Group and some selected large companies capitalized at over £10m. have been added to the list. The information contained has been confirmed by each listed company.

The arrangement has been reversed for parts 2 and 3. Part 2 comprises an alphabetical list of stockbrokers and the companies principally using them.

Similarly part 3 may be consulted in order to trace the companies that use a particular merchant bank.

The information in the directory is kept current by means of a quarterly updating circular issued to subscribers.

Although the entries are brief, the directory brings together in a useful manner information which is not available in a single source elsewhere.

WOODWORTH, D. P. Guide to current British journals *and* directory of publishers; vol. 1, guide to current British journals; vol. 2, directory of publishers. 2nd. ed. London, Library Association, 1973. 411 pp., 155 pp. £8.50, £4.50. (ISBNs 0 85365 356 9, 0 85365 097 7)

This is the second edition of two previously separate works. It combines *Guide to current British journals* with *Directory of Publishers of British journals*, reviewed in *Aslib Proceedings* May 1971 and December 1971 respectively. It is in two volumes, and one may be purchased without the other.

The first volume has the same format as the previous edition but includes many more titles and covers a wider scope, such as fictional journals, 'what's on' publications and monographs. It has two additional appendices, the first listing journals which have been discontinued since the last edition, and the second giving professional societies and their publications. The symbols used for level of appeal have a different meaning in the second edition, which is confusing.

The second volume is very similar to its last edition and covers the same scope as volume 1, providing publishers with their publications plus a separate journals index. Only those publishers verified as being in existence at the time of going to print have been included.

As a basic guide to journals and publishers these two volumes are a useful source.

SMITH, C. *and* WALKER, R. S. Library resources in Scotland 1972–1973. Glasgow, Scottish Library Association, 1973. x, 111 pp. £4.00 (£3.00 LA members). (ISBN 0 900649 02 X)

This guide covers all types of libraries and information units in Scotland, listing information collected in 1971–72.

It contains an increased number of entries over the first edition; the entries are arranged with running numbers alphabetically by the name of the organization with cross references from individually named libraries to their parent bodies. The entries give details of address, telephone number, staff, stock, classification used, catalogue, any publications, special interests and collections, and services provided, these services being indicated by a number whose significance is given in a key provided at the beginning of the book.

An appendix lists allocations of the inter-regional coverage scheme in public libraries. Also appended is the questionnaire from which the contents of the publication were compiled.

There are four indexes referring the user to the library entry number: the geographical index lists libraries by county and the four main cities; the type of library, *e.g.* college, hospital, industrial; a subject and collection name index; index of classification schemes used.

The book is clearly set out and easy to use, and should take its rightful place on the reference shelves among the area library-resource guides.

SLOCUM, R. B. *ed.*, Biographical dictionaries and related works: supplement. Detroit, Mich., Gale Research Co., 1972. xiv, 852 pp. $25.00.

This supplement to that reviewer's nightmare, a bibliography of bibliographies of biography, first published in 1967, gives publication details and one-line commentary on publications containing biographical details of more than 100 individuals, ranging from a directory of Venezuelan advertising executives to an index of obituaries in Boston newspapers. As in the main volume, the bibliographies are broadly classified into regional and vocational, the former section being arranged alphabetically by continent, country or race, with subdivisions by state, county or town, and the latter section arranged alphabetically by major discipline, subdivided where natural. Since a search through the regional section under Venezuela will not produce the first example above, a subject index is provided to guide one to the item, located in the vocational section at 'Economics and Commerce'

Although in the regional section 'General Works' might be better entitled 'Miscellaneous', the layout is clear, and the indexes (subject, compiler and title) helpful. Under each subheading, references are listed alphabetically by compiler, or title where no compiler is given, and are given a running number. The supplement includes 3,400 new entries, and is brought to 852 pages, only 200 less than the main volume, by the expansion of the Asian section, and the inclusion of many 18th- and 19th-century publications.

BOLTON, K. M. Accountants' Digest no. 3: sources of information on business organisations in the British Isles. London, Inst. Chartered Accountants, 1973. 75p post free (complete series £10.00).

The Institute of Chartered Accountants in England and Wales has recently launched a new series of publications entitled *Accountants' Digests*. Each *Digest* is to consist of a concise summary of the important features of the topic covered, with a guide to sources of further information; the *Digests* will appear periodically, and are available either on subscription for the whole series or for sale as individual titles. The series is designed to be filed in a special binder which is available for sale.

Digest No. 3 is designed to provide business information from various angles. For example, the third section (which begins the major part of the publication) lists sources relating to business organizations (on, for example, advertising agents, exporters, mergers and takeovers, new business names, property bonds) and assigns numbers which refer to the appropriate publications listed in another section. Where applicable, sources of further information are given.

The fourth section provides similar information for company activities, such as annual report, credit ratings, directors, competitors, related companies, wage bill. A brief section covers the Channel Islands, Isle of Man, Northern Ireland and the Republic of Ireland, and this is followed by the numbered list of published sources (115 altogether). Details given here consist of title of publication, publisher, frequency, current price, type of information provided, and libraries holding copies, indicated by roman numerals referring to the section following. This lists alphabetically libraries offering commercial reference facilities, and the following details are provided: name, address and telephone number; publications held (denoted by the numbers previously assigned); other relevant holdings and services.

The next section is an alphabetical list of publishers and their addresses. This is followed by 'Other useful addresses', and 'Other works of reference'.

Certainly this is a worthy attempt to cover the various facets of business information sources in a concise way. If there is any criticism to be made it is, perhaps, that there are important sections which are not self-sufficient, where it is necessary to refer to another section for full details, *i.e.* some sections are only indexes. This is not to detract, however, from what is obviously a very useful publication.

WEAST, R. C. *ed.*, Handbook of chemistry and physics, 1973–1974. 54th ed. Cleveland, Ohio, CRC, 1973. (ISBN 087819 454 1)

The editor of this renowned handbook is faced with the perennial difficulty of providing a desk-top reference tool containing up-to-date information sufficient for the needs of the majority of workers in chemistry and physics, together with the many interdisciplinary areas associated with them, while also providing for more specialized requirements. In this edition, as in the last published a year ago, in an attempt to cover the needs of the majority there are a number of new and revised sections, including: cryogenic properties of gases; key values for thermodynamics; limits for human exposure to air contaminants; commercial metals and alloys; conversion factors for units of thermal conductivity; strengths of chemical bonds. Those requiring more extensive listings of critically evaluated data will welcome the expanded and updated list of publications of the US National Reference Data System in addition to a number of references to primary data sources. This new edition will need no recommendation to the regular user, who will have found its potential use and proven value extends far beyond the numerical data contained within its pages.

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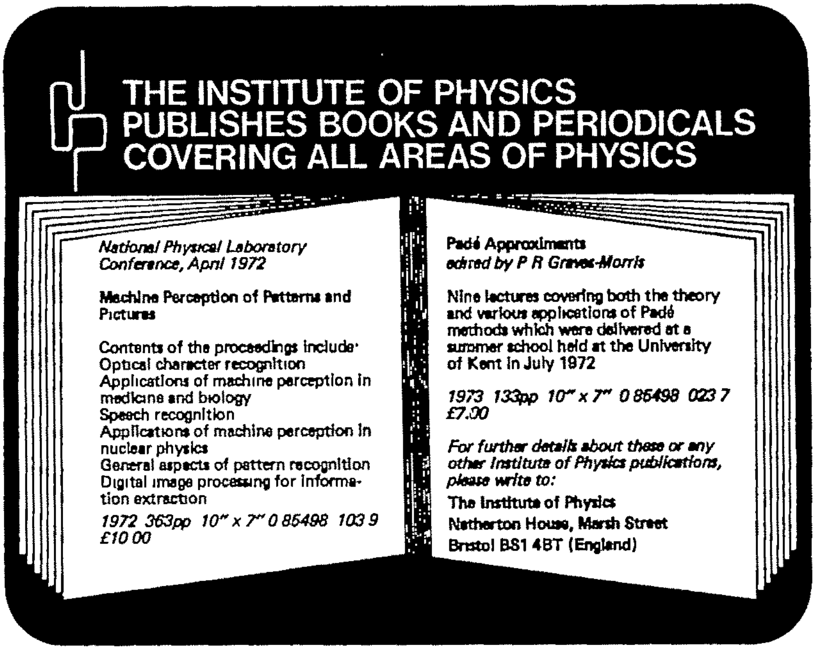

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Aslib Proceedings

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MARCH 1974
VOL. 26, NO. 3

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A computer-based current awareness system producing both SDI output and conventional abstract bulletin

H. H. Goom

Chief Information Officer, GKN Group Technological Centre

Paper presented at a Joint Meeting of the Aslib Midlands Branch and the Institute of Information Scientists Midlands Branch, 15 January 1974

Introduction

SDI, as an alternative to conventional current awareness bulletins, was considered in GKN as an appropriate alerting method where the user population is geographically scattered and often unused to the perusal of the normal abstract bulletin. A central Information Service for the Guest Keen & Nettlefolds Group is provided from the Group Technological Centre at Wolverhampton, and the potential users are the staffs of the various manufacturing units widely distributed over the United Kingdom, Europe, Africa, Asia, Australia, New Zealand and the USA. Subject interests are mainly in the fields of engineering, materials and management. A fortnightly technical abstract bulletin, the *Review of Current Literature*, was reaching some of these potential users but was used only by those with an incentive to search or browse. This was supplemented by a twice-weekly fast alerting service, the *News Review*, for commercial and economic information. SDI was considered, not to replace these services, but as a method of reaching additional users and providing a fast individual service.

The basic requirements of the service were determined after a feasibility study in 1968. This confirmed a significant demand for the service and also revealed that if costs were to be limited it would be necessary to retain some of the existing routines used in the production of the abstract bulletin. Furthermore, the system should be basically simple and economical in the use of computer time, yet sufficiently flexible to allow modifications at a later date. Even with an SDI service there was an indication of the need for a browsing facility in the form of a conventional abstract bulletin and an additional requirement of the system was that a bulletin should be produced as a by-product of the service.

In-house selection and abstracting was used for the production of the *Review of Current Literature* and it was decided to retain this policy for input to the SDI service. Commercial tape services were less common when this decision was made, but a close watch has since been kept on those which have subsequently appeared and none have yet proved appropriate to the needs of GKN. Selection for dissemination is thus made from information that itself matches the sum of the interests of the users. Some 500 journals are received and scanned but a hard core of about 150 provide much of the input. New patents are also reviewed and the total current input is now approximately 7000 items per annum.

Computer storage of input data and provision of a retrospective search facility was considered but the pattern of enquiry demand showed that most enquiries could be satisfied more quickly and easily by conventional methods, particularly as batch processing would have been necessary. The limited use anticipated would not justify the additional cost and it was decided to restrict the system to SDI, the production of a monthly abstract bulletin, and the compilation of a cumulative keyword subject index suitable for manual retrospective searching.

System design

The system was designed for an IBM 360-30 with 64K store operating under DOS (Disk Operating System). The major peripheral equipment consisted of 3 × 2311 disk drives, 3 × 2400 tape units, paper tape reader, card reader, and 1100 high speed line printer. The installation normally used PL1 programming language and paper tape input. It should be mentioned that during the few years since the system was designed, there has been considerable expansion of the hardware available, and the system is now run on an IBM 370/145 with 384K store, with peripherals including 2 × 3330 and 1 × 2319 disk drives, 5 high-speed Telex tape units, one Telex printer, one IBM 1403 printer, card and paper tape readers etc.

Two factors imposed constraints on the system. The use of paper tape input necessitated the use of a paper tape routine to read and check for basic validity and format according to general rules. Since software had already been developed for this in the installation, the decision was taken to use it, although it was not specifically designed for use in conjunction with SDI. The second factor was the use of DOS PL1 at a time when it had not reached its present degree of sophistication and little experience in its use was available. These constraints made it necessary to split the new abstract records and profile set-up records into two parts, and to limit the size of individual index terms to 24 characters.

Prior to implementation the system underwent three testing stages: initial program testing done remotely; concentrated testing of programs and the links between them, carried out over a short period at an IBM test centre; pilot running, where a limited volume of live data was run at the GKN installation in a controlled environment. As the system proved itself so the volume was increased to the fully operational level. From the points of view of both the Information Service and the Computer Centre the implementation of the SDI system proved to be unusually trouble-free.

The development work concentrated on producing a system which was as simple as possible for day to day administration, retaining many existing routines from the production of the *Review of Current Literature*, including manual indexing and the allocation of subject headings for the proposed computer-produced Review. The system was maintained in as 'open-ended' a form as possible, so that modifications required at a later date could be incorporated with the minimum of effort. In addition, the system was made flexible, so that printout containing abstracts and keywords, no abstracts, or no keywords, or even just a simple author, title and reference statement could be obtained. For example, the weekly processing for SDI gives a reference printout in subject order, numbered sequentially, of all new items for that week, containing title, abstract, author, reference and keywords, while the SDI output (Fig. 1) itself gives the first four of these and omits the keywords. A similar layout arranged under subject headings is used for the cumulations which now make up the monthly review. Abstracts are written on forms specially designed for this purpose. These forms contain subject heading fields for the cumulated review and also for security classification if required. These are followed by sections for author, title, reference, a five hundred character abstract and provision for up to twenty keywords.

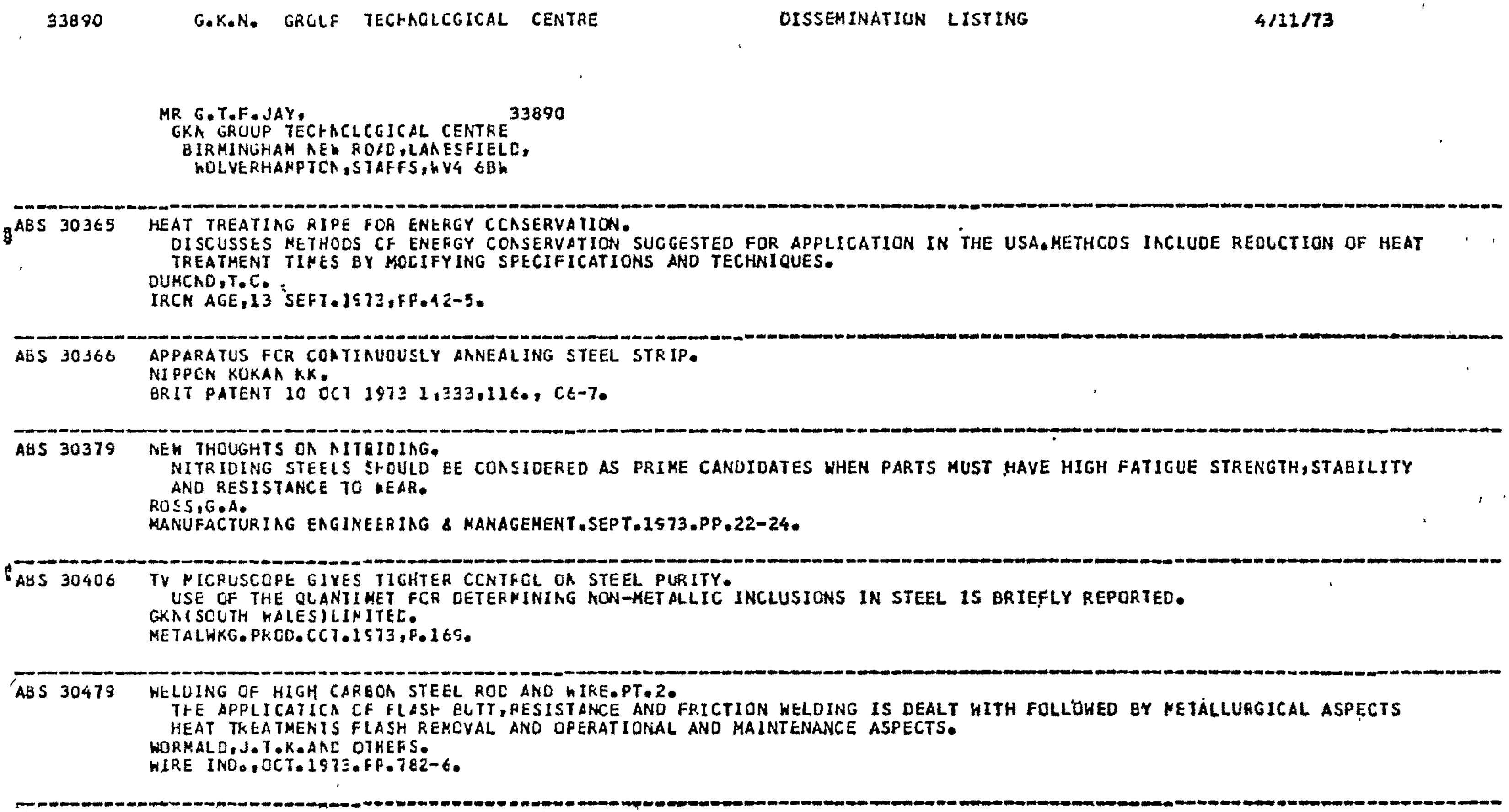
Thesaurus

A new thesaurus was compiled for the system and currently this stands at about 3000 terms. The construction was conventional; about eight hundred articles which had been abstracted for the *Review of Current Literature* were examined for their subject content, and the new thesaurus was built on this basic data. In addition many keywords were obtained from the *Thesaurus of Metallurgical Terms* published by the American Society for Metals, and the Engineers Joint Council's *Thesaurus of Engineering and Scientific Terms*. A strong hierarchical structure exists in the thesaurus which is of considerable value to the indexer. The possibility of using the computer to assist compilation of the thesaurus was considered but the availability of an IBM 72 magnetic tape Selectric typewriter provided a more economical method.

Profiles

The selection mechanism for generating the SDI output caused considerable problems in the early stages of design, as a term weighting system was desired to minimize the amount of computer time used. Finally a modification of a synthetic Boolean logic system developed from that described by Brandhorst[1] was implemented.

Each of the SDI profiles consists of up to ten subprofiles, each of which can contain up to ten keywords. The number of subprofiles available for each profile was selected as being nearest to the optimum number which would be adequate for the majority of profiles in the system. This number was estimated before any practical experience of operating SDI services was gained, i.e. at the design stage, but has proved to be quite sufficient. Within each sub-profile, the first keyword must be matched before the computer will continue to search for subsequent matches in that sub-profile. This limitation was imposed by the designers in order to reduce machine time to a minimum. Each keyword, other than the first, is given a numerical weight and each subprofile has a weight requirement which is the arithmetic total to be searched for. For example, in the statement A(B+C+D) where each letter represents a keyword, A is weighted as zero, as it would be the first term in the field and must be matched before subsequent keywords are searched for. B, C and D each have the weight



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 33890      G.K.N.  GROUP  TECHNOLOGICAL  CENTRE            DISSEMINATION  LISTING                4/11/73


                MR G.T.F.JAY,                   33890
                 GKN GROUP TECHNOLOGICAL CENTRE
                  BIRMINGHAM NEW ROAD,LANESFIELD,
                   WOLVERHAMPTON,STAFFS,WV4 6BW

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ABS 30365    HEAT TREATING RIPE FOR ENERGY CONSERVATION.
               DISCUSSES METHODS OF ENERGY CONSERVATION SUGGESTED FOR APPLICATION IN THE USA.METHODS INCLUDE REDUCTION OF HEAT
               TREATMENT TIMES BY MODIFYING SPECIFICATIONS AND TECHNIQUES.
             DUMOND,T.C.
             IRON AGE,13 SEPT.1973,PP.42-5.
--------------------------------------------------------------------------------------------------------------------
ABS 30366    APPARATUS FOR CONTINUOUSLY ANNEALING STEEL STRIP.
             NIPPON KOKAN KK.
             BRIT PATENT 10 OCT 1973 1,333,116., C6-7.
--------------------------------------------------------------------------------------------------------------------
ABS 30379    NEW THOUGHTS ON NITRIDING.
               NITRIDING STEELS SHOULD BE CONSIDERED AS PRIME CANDIDATES WHEN PARTS MUST HAVE HIGH FATIGUE STRENGTH,STABILITY
               AND RESISTANCE TO WEAR.
             ROSS,G.A.
             MANUFACTURING ENGINEERING & MANAGEMENT.SEPT.1973.PP.22-24.
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ABS 30406    TV MICROSCOPE GIVES TIGHTER CONTROL ON STEEL PURITY.
               USE OF THE QUANTIMET FOR DETERMINING NON-METALLIC INCLUSIONS IN STEEL IS BRIEFLY REPORTED.
             GKN(SOUTH WALES)LIMITED.
             METALWKG.PROD.OCT.1973,P.169.
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ABS 30479    WELDING OF HIGH CARBON STEEL ROD AND WIRE.PT.2.
               THE APPLICATION OF FLASH BUTT,RESISTANCE AND FRICTION WELDING IS DEALT WITH FOLLOWED BY METALLURGICAL ASPECTS
               HEAT TREATMENTS FLASH REMOVAL AND OPERATIONAL AND MAINTENANCE ASPECTS.
             WORMALD,J.T.K.AND OTHERS.
             WIRE IND.,OCT.1973.PP.782-6.
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FIG. 1: *GKN SDI printout.*

B

of 1, and a weight limit of 1 is set for the whole equation. Consequently A.B, A.C, or A.D is sufficient to meet the weight limit. Similarly A+B+C+D is dealt with by using each term as first term in a series of single term searches. Weights in this case are all 1 and a weight limit of 1 is set. A further example is that of A.B.C.D where A as first term can carry the weight of zero, B, C and D are each assigned the weights of 1, and the weight limit is 3. Other equations are dealt with in similar fashion, and if necessary they are broken down into their component equations in order to fit into the series of sub-profile fields which we use. An example of this is (A+B) (C+D) which has to be treated as A(C+D) and B(C+D). More complex statements can be accommodated by suitable choice of weighting, using the rules outlined and the principles of symbolic logic. The system has worked very well in practice with considerable economy in processing times.

Profile compilation is quite simple; the natural language statement of subject interests supplied by the prospective user is broken down into individual concepts. These are then translated into the appropriate keywords using the thesaurus, adding new terms as necessary. Logical statements utilizing these keywords are compiled for each natural language phrase. The keywords are then entered in the various fields of the profile form with weighting added to produce the required logical relationships. The time required for this process can vary enormously depending on the complexity of the original statement of subject requirements. Modifications to profiles can be made when the user has had the opportunity of evaluating the results of the service.

With users scattered world-wide it is difficult to arrange direct discussions with them regarding their interests, but written statements have served as a very good basis for profile compilation, and in only a few cases is it necessary to refer back for further details.

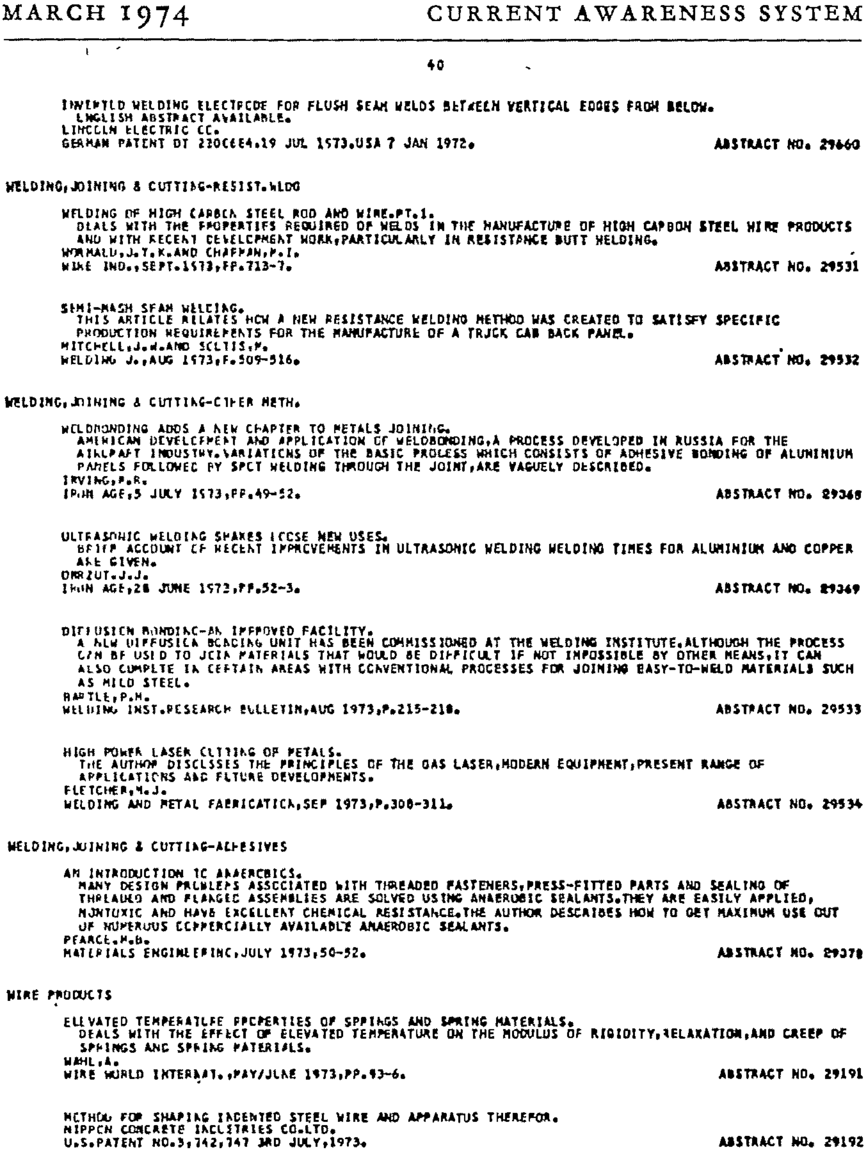
Profile compilation commenced early in 1969 with some thirty members of the Group Technological Centre staff. Satisfactory results from trial runs with these profiles led to the addition of more profiles and with a steady increase the total number is now approximately 650. Our main problem now is the location of personnel who have not previously used the information facilities and for whom the SDI service could be of considerable value.

Review of Current Literature

The computer printout of the month-end run arranged under broad subject headings is produced on plain stationery to approximately A3 format. Details of new library accessions, forthcoming meetings and exhibitions, and a contents page are typed, also on A3 paper. A Rank Xerox photoreducing service is used to produce A4 offset litho plates from which about 500 copies of the *Review of Current Literature* are printed (Fig. 2). These are collated, bound between printed card covers, and despatched together with a requisition form with which users may request photocopies of items of interest to them.

Operation of the system

The completed profile forms are used to produce a paper tape which is used as input to the first module in the program sequence—CO1A. (Fig. 3). This pro-



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MARCH 1974                                CURRENT AWARENESS SYSTEM

                                   40

        INVERTED WELDING ELECTRODE FOR FLUSH SEAM WELDS BETWEEN VERTICAL EDGES FROM BELOW.
          ENGLISH ABSTRACT AVAILABLE.
        LINCOLN ELECTRIC CO.
        GERMAN PATENT DT 2300664.19 JUL 1973.USA 7 JAN 1972.                           ABSTRACT NO. 29660


WELDING,JOINING & CUTTING-RESIST.WLDG

        WELDING OF HIGH CARBON STEEL ROD AND WIRE.PT.1.
          DEALS WITH THE PROPERTIES REQUIRED OF WELDS IN THE MANUFACTURE OF HIGH CARBON STEEL WIRE PRODUCTS
          AND WITH RECENT DEVELOPMENT WORK,PARTICULARLY IN RESISTANCE BUTT WELDING.
        WORMALD,J.T.K.AND CHAPMAN,P.I.
        WIRE IND.,SEPT.1973,PP.713-7.                                                  ABSTRACT NO. 29531


        SEMI-MASH SEAM WELDING.
          THIS ARTICLE RELATES HOW A NEW RESISTANCE WELDING METHOD WAS CREATED TO SATISFY SPECIFIC
          PRODUCTION REQUIREMENTS FOR THE MANUFACTURE OF A TRUCK CAB BACK PANEL.
        MITCHELL,J.W.AND SOLTIS,P.
        WELDING J.,AUG 1973,P.509-516.                                                 ABSTRACT NO. 29532

WELDING,JOINING & CUTTING-OTHER METH.

        WELDBONDING ADDS A NEW CHAPTER TO METALS JOINING.
          AMERICAN DEVELOPMENT AND APPLICATION OF WELDBONDING,A PROCESS DEVELOPED IN RUSSIA FOR THE
          AIRCRAFT INDUSTRY.VARIATIONS OF THE BASIC PROCESS WHICH CONSISTS OF ADHESIVE BONDING OF ALUMINIUM
          PANELS FOLLOWED BY SPOT WELDING THROUGH THE JOINT,ARE VAGUELY DESCRIBED.
        IRVING,R.R.
        IRON AGE,5 JULY 1973,PP.49-52.                                                 ABSTRACT NO. 29368


        ULTRASONIC WELDING SHAKES LOOSE NEW USES.
          BRIEF ACCOUNT OF RECENT IMPROVEMENTS IN ULTRASONIC WELDING WELDING TIMES FOR ALUMINIUM AND COPPER
          ARE GIVEN.
        OMRZUT.J.J.
        IRON AGE,28 JUNE 1973,PP.52-3.                                                 ABSTRACT NO. 29369


        DIFFUSION BONDING-AN IMPROVED FACILITY.
          A NEW DIFFUSION BONDING UNIT HAS BEEN COMMISSIONED AT THE WELDING INSTITUTE.ALTHOUGH THE PROCESS
          CAN BE USED TO JOIN MATERIALS THAT WOULD BE DIFFICULT IF NOT IMPOSSIBLE BY OTHER MEANS,IT CAN
          ALSO COMPETE IN CERTAIN AREAS WITH CONVENTIONAL PROCESSES FOR JOINING EASY-TO-WELD MATERIALS SUCH
          AS MILD STEEL.
        BARTLE,P.M.
        WELDING INST.RESEARCH BULLETIN,AUG 1973,P.215-218.                              ABSTRACT NO. 29533


        HIGH POWER LASER CUTTING OF METALS.
          THE AUTHOR DISCUSSES THE PRINCIPLES OF THE GAS LASER,MODERN EQUIPMENT,PRESENT RANGE OF
          APPLICATIONS AND FUTURE DEVELOPMENTS.
        FLETCHER,M.J.
        WELDING AND METAL FABRICATION,SEP 1973,P.308-311.                               ABSTRACT NO. 29534

WELDING,JOINING & CUTTING-ADHESIVES

        AN INTRODUCTION TO ANAEROBICS.
          MANY DESIGN PROBLEMS ASSOCIATED WITH THREADED FASTENERS,PRESS-FITTED PARTS AND SEALING OF
          THREADED AND FLANGED ASSEMBLIES ARE SOLVED USING ANAEROBIC SEALANTS.THEY ARE EASILY APPLIED,
          NONTOXIC AND HAVE EXCELLENT CHEMICAL RESISTANCE.THE AUTHOR DESCRIBES HOW TO GET MAXIMUM USE OUT
          OF NUMEROUS COMMERCIALLY AVAILABLE ANAEROBIC SEALANTS.
        PEARCE.M.B.
        MATERIALS ENGINEERING,JULY 1973,50-52.                                         ABSTRACT NO. 29378

WIRE PRODUCTS

        ELEVATED TEMPERATURE PROPERTIES OF SPRINGS AND SPRING MATERIALS.
          DEALS WITH THE EFFECT OF ELEVATED TEMPERATURE ON THE MODULUS OF RIGIDITY,RELAXATION,AND CREEP OF
          SPRINGS AND SPRING MATERIALS.
        WAHL,A.
        WIRE WORLD INTERNAT.,MAY/JUNE 1973,PP.93-6.                                    ABSTRACT NO. 29191


        METHOD FOR SHAPING INDENTED STEEL WIRE AND APPARATUS THEREFOR.
        NIPPON CONCRETE INDUSTRIES CO.LTD.
        U.S.PATENT NO.3,742,747 3RD JULY,1973.                                         ABSTRACT NO. 29192
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FIG. 2. *Review of Current Literature—printout.*

gram uses the new information, subject to validity checking, to update the Master Profile Tape with amendments, deletions and new profiles. In addition, a disk file is created containing a record for each sub-profile (concept) on the Master Profile Tape and its associated Profile Number. The records are sorted on the first keyword of each concept.

Each week new and deleted abstract information is punched into paper tape, together with keywords describing the subject content of each item and a three-character subject heading code under which the abstract will appear

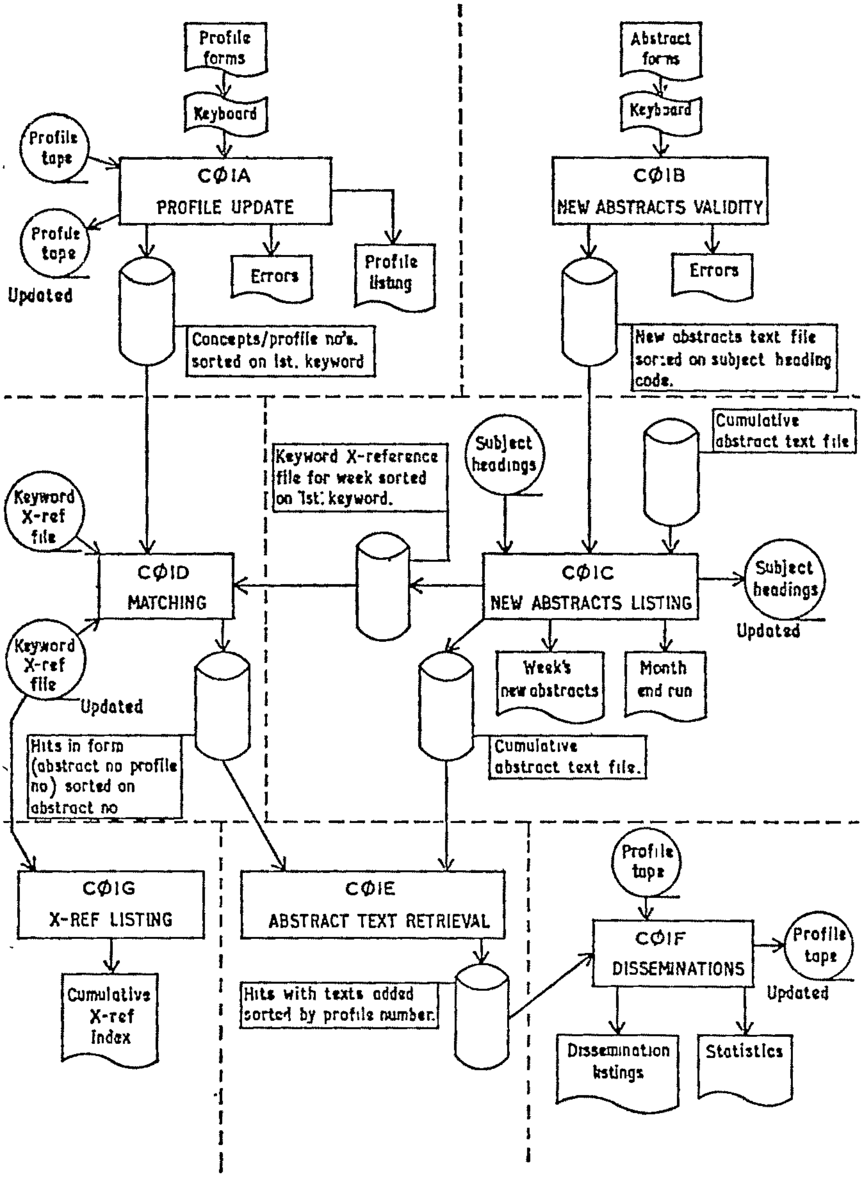

FIG. 3. *GKN SDI system—program sequence.*

in the monthly *Review of Current Literature*. Program CO1B checks the validity of the abstract records and produces a disk file of valid new input, sorted on the subject heading code. Program CO1C allocates sequential abstract numbers to the week's new abstracts and lists these in abstract number order. This listing is used for editing purposes and is cumulated in post-binders to form a master listing of all abstracts input to the system. In addition, CO1C updates a disk file containing a cumulation of the month's new input, and at the month-end a special run is undertaken to produce a listing under the appropriate subject headings. This forms the basis of the *Review of Current Literature*. Finally, program CO1C generates a keyword cross-reference record for each keyword of the new abstract input, and produces a disk file of these records sorted by the first keyword.

Example:
If abstract number 12345 is indexed by keywords FORGING, FORMING, STEELS, MICROSTRUCTURE, the following keyword cross-reference records will be generated:

FORGING-FORMING-MICROSTRUCTURE-STEELS-12345
FORMING-FORGING-MICROSTRUCTURE-STEELS-12345
MICROSTRUCTURE-FORGING-FORMING-STEELS-12345
STEELS-FORGING-FORMING-MICROSTRUCTURE-12345

For each keyword a record is created comprising the keyword itself, the remaining keywords in ascending sorted order, and the originating abstract number.

A cumulative magnetic tape file is maintained of all the keyword cross-reference records in a year, sorted by first keyword. Program CO1D updates this file by merging the keyword cross-reference records for the week's abstracts into the cumulative file. This is printed periodically by program CO1G to produce an index to the year's abstracts. The cumulated cross-reference index is thus a simple by-product of routines designed to create files for the matching of abstract and profile keywords. However, it has proved in practice to be a surprisingly effective index for manual retrospective searching.

An author index to non-patent items is created by the use of an additional keyword for each item consisting of a special character (a plus sign +) followed by the author's surname, a hyphen, and the author's initials. This results in a sorted cross-reference index headed by those records having the author "keyword" as first term (author's names are sorted by surname and initials). A similar device is used in the case of patents, but with a different initial character (an asterisk *). This gives a separate listing of patentees, following the author listing and preceding the subject keywords.

Program CO1D matches the profile concept records generated by CO1A and the keyword cross-reference file of the week's abstracts created by CO1C. When the logic requirements of a sub-profile are met by the keywords of an abstract, a record consisting of the abstract number and the profile number is output to a Hits Disk File. CO1D is completed by sorting the Hits Disk File into ascending abstract number order.

Program CO1E expands the abstract numbers by retrieving the complete abstract records from the disk file created by CO1C, and the records are sorted into profile number order.

CO1F then reads the profile information off the Profile Master Tape and prints the individual dissemination under the name and address of the profile holder. The Profile Master Tape is updated with statistical information and statistics of 'hits' for the week's run are listed.

The unburst stationery is guillotined to remove both the sprocket drive holes and the perforations. Finally a Kern automatic folding and envelope-filling machine with overhead insert places the printout and a reply card into a window envelope so that the name and address can be seen and it is suitable for direct despatch.

Feedback

To be fully effective an SDI system should monitor feedback from the users and use it to vary the controls applied to the system, in an attempt to improve performance. In the GKN-SDI system, the feedback may be represented as shown in Fig. 4. Three main channels exist:

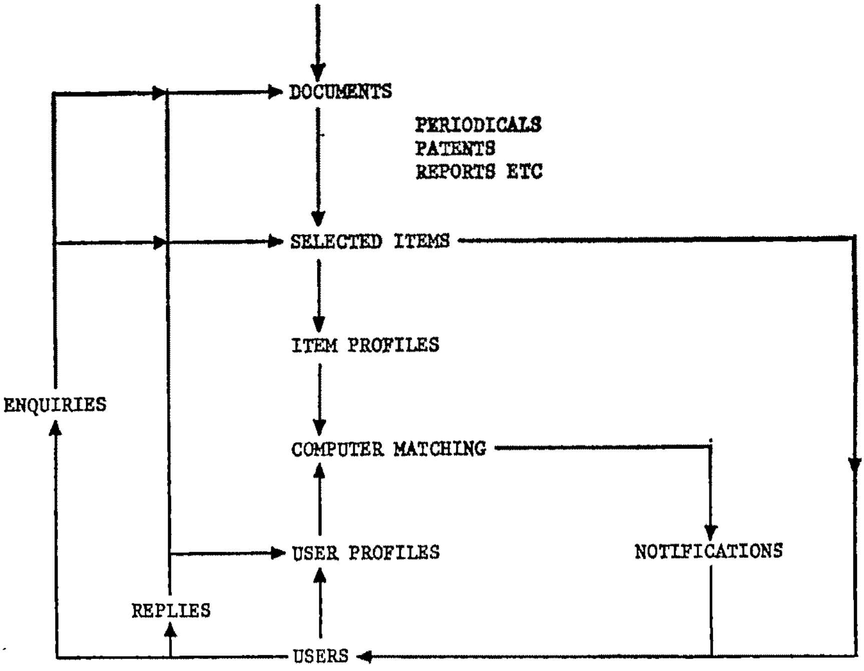

FIG. 4. *GKN SDI system—feedback.*

1. The vertical arrow from the Users to the User Profiles represents both the initial profile formulation and any subsequent modifications initiated by a user due to changes in his interests.
2. The reply cards on which users give their assessments of the value of the notifications they have received are used to monitor the effectiveness of certain features of the system, and to initiate changes where necessary.
3. The day-to-day enquiry work carried out by the information service causes the staff to be aware of new interests and changes of emphasis within the Group, and this affects the system at the document-selection and item-selection levels.

The reply card information serves three purposes:

1. They are used for requests for copies of items which users require to see in full.
2. A record is kept for each profile of the replies received via the reply cards. Periodic examination of these records reveals those profiles which are giving rise to a disproportionate number of irrelevant notifications. Action is then taken to determine the reasons for these and to take corrective measures if required. Such measures might include contacting a user to check on the validity of his original statement, or re-compilation of a profile formulation, or modification of the selection procedure for items input to the system.
3. The performance of items put into the system is monitored. A count is kept of the number of requests for copies of each item both via the SDI Service and via the monthly abstract bulletin. After a suitable period of time when the figures have stabilized, a copy of the *Review of Current Literature* is marked up with the total requests received for each item. By this means it is possible to determine subject areas where a low level of interest appears to exist. This may be due to faulty selection, resulting in low relevance material being put into the system. On the other hand where items known to be relevant to the company's interests are not requested, this may be because no one working in the subject area concerned has a profile in the system, or it may be the result of incorrect profile formulation or document indexing. In any of these cases the required remedial action can be initiated and steps taken to improve the effectiveness of the system.

Costs

The system was designed at a time when the GKN Computer Centre was being established and development costs were absorbed in the general development costs of the centre. Operating costs in the form of machine time, data preparation and any subsequent programming are charged to the Information Service. Programming costs are now negligible but the other annual running costs are as follows:

Machine time	£5,000
Data Preparation	£800
Stationery	£500

Within the Information Service preparation of abstracts requires no more effort than was formerly required for a conventional abstract bulletin and the main additional effort is devoted to profile formulation and indexing. This has required the services of one full-time Information Officer.

Requests for documents as a result of the SDI Service and the *Review of Current Literature* are now 30,000 per annum and the provision of this back-up service incurs additional costs in the form of junior staff time, stationery, photocopying, postage, etc.

Acknowledgement

The development and operation of a system such as this is the work of a team and efforts of many of the staff of both the GKN Computer Centre and the

Information Service of GKN Group Technological Centre must be gratefully acknowledged.

Summary

The selective dissemination of information, as an alternative to conventional current awareness bulletins, was considered in GKN as an appropriate alerting method where the user population is geographically scattered and often unused to the perusal of the normal abstract bulletin. A browsing facility was still considered necessary for some users and a system was designed which is basically simple, economical of computer time and capable of producing a monthly abstract bulletin as a by-product. The service has now been functioning successfully for five years.

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1 BRANDHORST, W. T. Simulation of Boolean logic constraints through the use of term weights. *American Documentation*, 1966 17 (3), 145–146.

Some indexing/searching characteristics of special libraries in science and technology in the UK

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Introduction

TWO questionnaire surveys were conducted—the first one in 1968/69 and the second in June 1973—among the same sample of 98 special libraries and information departments in science and technology in the UK. Some of the findings of the 1968/69 survey concerning the general characteristics of these centres, such as the nature of their management, activity of the parent organization, subject-specialization of the library's holdings, staff-structure, stock-size, budget-provision, documentation activity, have been reported in an earlier communication[1]. The techniques of sampling and analysis of data used in this survey have also been discussed in detail in that paper. Only a small selection of data from these two surveys is presented in this paper, covering aspects of indexing and searching operations in special libraries.

The paper is divided into two sections:

1. 1968/69 survey results.
2. 1973 survey results, and their comparison with those for 1968/69.

Section 1 is further subdivided as:

- 1.1 Analysis of conventional (pre-coordinate) indexing systems, as used by all libraries in the sample.
- 1.2 Analysis of non-conventional (post-coordinate and mechanized) indexing/searching systems, as used by only some of the 98 centres in the sample.

The terms 'conventional system (CS)', and 'non-conventional system (NCS)' are used throughout this article in the sense as defined above.

1. Results of the 1968/69 survey

1.1 *Conventional systems (CS)*

Most of the libraries and information departments make use of classification and conventional indexing systems in respect of at least certain types of material (e.g. books) or for certain kinds of operations (e.g. shelving and filing). However certain types of libraries also use other systems for different types of material (e.g. internal reports, patents, microforms), for other purposes (e.g. retrieval only) or for both. The number of indexing systems used by the libraries in the main sample is shown in Table 1. More than two-thirds of the sample use only one type of indexing system. It is significant that the use of multi-system

TABLE I

(Level of response: 87%)

Number of indexing systems used	Number of libraries using CS	Number of libraries using NCS	Total
1	62	5	67
2	5	7	12
3 or more	1	5	6
Not reported	13	—	13
Total	81	17	98

indexing among the NCS-users is ten times higher than among the CS-users (70% against 7%).

Furthermore, the detailed analysis of the data shows clearly that there is a direct relationship between the use of multi-system indexing by a centre and the level of its information activity. For example, libraries in the field of applied research (such as those attached to R & D organizations) have been found repeatedly, on the basis of our earlier analysis, to be a 'high performing' group compared to libraries in other categories (e.g. basic research, manufacture), in respect of diverse criteria applied (e.g. level of documentation activity, proportion of staff committed to indexing/searching operations, intensity of indexing). This pattern is confirmed when it is found that libraries in applied research overwhelmingly dominate the sample (67%) of users of multi-system indexing, although the strength of the former in the main sample (98 libraries) is less than 35%.

Analysis of the same sample of multi-system indexing users (18 centres) in terms of the nature of management of the library's parent organization shows that two-thirds of this sample are located in private firms, although the latter's share of the main sample is no more than 49%. Academic libraries are characterized by a very low-level use (5%), whereas government libraries use multi-system indexing a little more than is warranted by their share of the main sample (28% against 23.5%).

Shelving criteria

The survey revealed a very wide range of devices (26 in all) employed by special libraries for the shelving of their literature. There are various reasons for this diversity. First, it depends on the type of material: for example, a large majority (79%) use classification schemes for shelving books; in the case of periodicals, the most favoured criterion (66%) is 'title', arranged alphabetically. Even with the same type of material, there is a wide range of differences among the libraries: for example, out of the 26 different shelving criteria there are 11 types each used by one centre only. These differences arise partly because of the varying requirements of the libraries, and also partly, it is believed, because of inadequate communication between libraries having similar background and interest. Differences also arise among libraries depending on what type of indexing/

searching system is used. For example, 44% of CS-users, as opposed to 12% of NCS-users make use of subject-classification for the shelving of report literature.

Classification systems

An analysis of the various classification schemes used by different libraries is given in Table 2.

This table shows the following major points:

a. Except for academic libraries, Dewey's classification is now virtually non-existent among special libraries in science and technology (1 out of 85).

b. Among all the standard classification schemes (e.g. DC, UDC, LC, Bliss), UDC by far outdistances all others and accounts for 40% of all the schemes in use.

   NCS-libraries use UDC much more than CS-libraries (54% as opposed to 37%).

   There is a significant limitation on the use of UDC by NCS-users; 44% use UDC for books only.

   When the attitude of NCS-users to classification systems as such is considered it is found that 12% of them do not use any classification system at all, while another 48% use it only for books.

c. Next only to UDC, in terms of popularity, are the various indigenous schemes and also the unspecified ones (presumably non-standard schemes) which together account for one-third of all the schemes in use.

Indexing systems

An analysis of indexing systems in use is shown in Table 3.

Significant points are as follows:

a. Although the NCS-users constitute no more than 17% of the main sample, they nevertheless account for 34% of all the indexing systems in use; also they operate, on average, two indexing systems per library (the corresponding figure for CS-libraries is 1.1).

b. Dividing the indexing systems into two broad categories, classified and alphabetic (both of various types), it is found that the former accounts for 62% and the latter 38% of all the operating systems.

   However, if these overall figures are analysed in terms of the type of libraries using the systems, a more significant pattern emerges. For CS-libraries, the classified index predominates over the alphabetic index (77% as against 23%). For the NCS-users, the roles are reversed; 68% of the systems used by them are alphabetic against 32% classified. Again, out of these 32%, 12% are used for indexing *books only*, thus leaving only 20% to the classified indexes which are used for all types of material.

c. A large proportion of the libraries (ca. 80%) which use classified indexing systems use an alphabetic guide to the main index. When all the systems are considered, it appears that 87% of them rely on the alphabetic index, either wholly or partly, directly or indirectly, as a means of information retrieval. Only 5% of the systems rely on classification without any resort to alphabetic guide.

TABLE 2

(Level of response: 82.5%

Classification of Library	UDC no. of users	UDC books only	UDC modified	DC	LC	Facet	Bliss	Barnard	Others	Lib's own scheme	Unspecified	No classification	No reply	Total no. of reported systems
CS-users	25	3	5	7+	2	4	2	3	—	8	15	2	17	68
NCS-users	9	4	—	—	—	—	—	—	1	5*	—	2	—	17
Total	34	7	5	7	2	4	2	3	1	13	15	4	17	85

+ 6 out of these 7 are used by academic libraries.

* 4 out of these 5 are used for books only.

N.B. The figures in this Table represent the number of different classification schemes used and *not* the number of responding centres. Some centres do not use any classification scheme at all, while others may use more than one.

TABLE 3

(Level of response: 78%)

N.B. The figures in this table represent the number of indexing systems in use and *not* the number of responding libraries; the latter are indicated by the figures within brackets in the last row and column.

Type of library	Classified index					Alphabetico-specific index								Total
	With alphabetic index	Without alphabetic index	Used for books only	Classified index being replaced	Total classified indexes	Alphabetico-classed index	Natural form	Inverted form	Total	Dictionary catalogue	Kwic index	Keyword index	Total alphabetic indexes (cols. 6,9,10,11,12)	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CS-users	39	5	3	—	51	2	1	4	9	4	—	—	15	66 (60)
NCS-users	10	—	4	2	11	1	—	1	3	1	4	14	23	34 (17)
Total	49	5	7	2	62 (47)	3	1	5	12	5	4	14	38 (30)	100 (77)

d. Among the various types of alphabetic indexes, the keyword index occupies the leading position (37%), followed closely by the alphabetico-specific index (32%); the dictionary catalogue comes next as a poor third (13%), while the alphabetico-classed catalogue occupies, not surprisingly, the lowest position (7.5%).

   Only 6% of NCS-users are operating a KWIC index system at present, but as this is amenable to machine manipulation and also economic, its popularity may slowly rise (with the need for rapid processing of increasing volumes of literature). Another 6% were reported to be under development, thus accounting for 12% of all NCS.

In view of the strong position of the alphabetic approach to information, as demonstrated in this survey, a more detailed analysis of the role played by this system within the special library field was attempted. What type of libraries prefer alphabetic indexing? What factors influence their selection and use? Answers to these questions were attempted by correlating the data regarding the use of this indexing system with the various basic categories into which the libraries could be divided, such as the 'activity' of their parent organization, the subject-specialization of their holding, the use or non-use of NCS by the libraries concerned. This analysis shows the following broad pattern.

a. Nearly all the NCS-users (88%) rely on alphabetic indexing, whereas only about a quarter of the CS-users do so.
b. Libraries in the applied research field, already shown to be 'high performers' account for 57% of the use of alphabetic indexing, although they comprised only 34.25% of the main sample. The association of alphabetic indexing with this group suggests that this indexing system is one of the attributes of 'high performance' in information exploitation.
c. Libraries specializing in chemistry and physics and their related technologies account for 70% of the use of alphabetic indexing although they comprise only 52% of the main sample.

Indexing level

The data base used for indexing purposes, such as the title of the document, its abstract, table of contents/chapter headings, the document as a whole, may vary considerably from one library to another depending on its needs, resources, type of system used.

A preliminary examination of data from the 69 responding libraries shows that 21% of them use more than one indexing level. The CS- and NCS-users also display different patterns of behaviour in the use of *multi-level* indexing. These patterns are in general agreement with those observed earlier in the use of *multi-system* indexing. Thus, 47% of the NCS-users employ multi-level indexing, while only 15% of the CS-users do so (the corresponding figures for the two groups, with respect to multi-system indexing, are 70% and 7%).

A detailed analysis of the use of various indexing levels and their distribution among libraries of the above two categories shows the following characteristics. The use of the document as a whole emerges as the most frequently-used indexing level (52.5%) for both CS- and NCS-users. However, NCS-users make use of 'abstracts' four times as often as the CS-users (33% as against 8%), whereas CS-users make more use of 'title' (23% as against 8%).

Source and control of index-terms

So far the different types of indexes used by special libraries and the various levels of the document at which the indexing information may be sought have been examined. The different sources from which the verbal forms of the index-terms are obtained will now be analysed, irrespective of whether the basic index used is alphabetic or the alphabetic index is used as a guide to the classified index. The efficient compilation of an alphabetic index is essential to the operation of all indexes, classified or alphabetic. This is determined largely by the method used to coin the 'new terms' needed for the system, and also the means by which the indexing vocabulary, once created, is maintained.

There are various ways in which this operation could be carried out. If the subject-area concerned is served by an established scheme (e.g. Euratom thesaurus, NASA thesaurus), the library may find it convenient to start with this scheme. If this is not possible, the library may start building its own vocabulary by borrowing terms from literature in the field. Many special libraries find it convenient, for reasons of simplicity and lack of time and resources, to index their documents on the basis of terms present in their natural language text i.e. title, abstract. In practice however, different methods gradually merge into one another. A library which first starts indexing from natural language text without any control gradually develops its own vocabulary of index-terms and begins to examine the new terms against it to control synonymous or other unwanted terms. Similarly, libraries which start in a planned manner with an established authority list of terms—either their own or an external one—soon find it necessary to introduce new terms into their lists, many of which are derived from the natural language of the documents indexed, on account of continuous innovation and change in the field of science and technology.

The responding sample of 49 libraries can be divided into two groups of almost equal number:

a. Libraries which use natural language, mainly or partly, as their source of index-terms (25 centres).
b. Libraries which do not use natural language and employ some variety of controlled vocabulary (24 centres).

Table 4 gives an analysis of libraries using natural language (NL) as the source of index terms.

a. Although the libraries using NCS indexing predominantly base themselves on the keyword index, the majority of them do not favour the selection of these keywords from the natural language of the documents. This may be due to the fact that the majority of them use a very limited vocabulary, and this presupposes a high degree of control.
b. However, most of the conventional libraries using natural language as an aid to their indexing appear to be advocates of the classified index (70%). This may well be due to the inadequacies of the available alphabetic guides

TABLE 4
(Size of the sample: 25)

Type of library	Libraries using NL terms			Libraries using:		Type of control used				
	Mainly	Partly	Total	Classified index	Alphabetic index	External list	Internal list	Experience memory, etc.	No control	Total
CS-users	15	7	22	15	7	3	10	1	6	20
NCS-users	1	2	3	1	—	—	3	1	—	4
Total	16	9	25	16	7	3	13	2	6	24

to the classification schemes. It is true for UDC, which is used by 7 libraries out of the 15 in this category.

c. Completely uncontrolled natural language is not favoured (only 24% of the sample belong to this category).

d. Among the various types of control used by different libraries, internally compiled authority lists are most common (72%); 17% use external authority lists; 11% control their vocabulary with the help of memory, experience and common sense. The low level of use of standard lists (17%) is due partly to the absence of such lists in many subject areas, but mainly because no standard, externally-compiled list can continue to serve the specific needs of a particular special library for any length of time. This explains the prevalence of internal authority lists.

Cross referencing

To what extent do special libraries use cross-references in their indexing? What sort of cross-reference techniques do they usually employ? The analysis of the data received provided the following general picture.

a. The largest group of libraries (44%) either do not use any cross-references at all or use them very little. The second largest group (40%) comprises libraries which make extensive use of cross-references.

b. Of the different cross-referencing techniques employed, the one most frequently used (41%) involves 'reference to related topics'; the use of the other two techniques, i.e. reference 'from general to specific' or 'from one synonym to another', is noticeably less (30% and 29%). The significance of this probably lies in the assumption that a reference from one topic to a related one on which material is held is in much greater need of an explicit statement in the index than either synonyms or specific terms, both of which can be deduced, to some extent, by the searcher himself.

Indexing vocabulary size

In view of the low level of response to the question on the size of the indexing vocabulary used (30%), a detailed analysis of the data would not be worthwhile. However, the overall pattern revealed in Table 5 may not be unrepresentative of the special library population.

a. The high level of response from the NCS-users is itself an indicator of the more quantitative control over indexing operations, including vocabulary size maintained by them, compared to the CS-users.

b. Nearly two-thirds of the sample use less than 2000 index-terms; the libraries using more than 5000 terms constitute less than one-sixth of the sample.

Indexing intensity

An attempt has been made in Table 6 to determine the intensity of conventional indexing by estimating the average number of index-cards per document.

a. In book-indexing only about one-fifth of the sample shows a high level of indexing intensity. For report literature, however, the corresponding figure is much higher, nearly one-half of the sample.

TABLE 5

(Overall level of response: 30%. CS-users: 21%; NCS-users: 77%)

Size of indexing vocabulary	No. of libraries	% of sample
Less than 500 terms	4(0)	13.3(0)
Between 500 and 2000 terms	15(8)	50 (61.5)
Between 2000 and 5000 terms	6(3)	20 (23)
Between 5000 and 10,000 terms	2(1)	6.7(7.7)
Over 10,000 terms	3(1)	10 (7.7)
Total	30(13)	100 (99.9)

N.B. The figures within brackets refer to NCS-users.

TABLE 6

(Overall level of response: 54%)

Type of document	Average number of cards per document							
	No. of respondents for (a)	Total no. of index-cards (a)			No. of respondents for (b)	Subject-index cards (b)		
		CS-users	NCS-users	All libraries		CS-users	NCS-users	All libraries
Book	46	3.6	4.4	3.8	48	1.9	2.3	2
Report	35	4.7	4.4	4.6	35	3	4	3
Journal article	28	4	2.4	3.6	26	2.7	2	2.5

TABLE 7

Level of indexing intensity	For books		For reports	
	No. of libraries	%	No. of libraries	%
Low (1–3 index cards per document)	23	50	10	28.5
Medium (4 index cards per document)	13	28.3	8	23
High (5 or more index cards per document)	10	21.7	17	48.5
Total	46	100	35	100

b. A more detailed analysis of the 'active' centres (i.e. those having medium or high level indexing intensity) and their comparison with libraries of different categories was undertaken in order to determine what factors influence the attitude of certain special libraries towards indexing. This analysis confirmed the now-familiar pattern; the libraries in the applied research field account for 50% of the 'active' sample (although only 34.25% of the main sample), while the libraries in basic research comprise only 10% of the 'active' sample (although 15.25% of the main sample) (Table 7).

Indexing-time

An analysis of the 52 responding libraries for the average time taken in indexing a document is given in Table 8.

TABLE 8

(Overall level of response: 53%. CS-users: 49%; NCS-users: 78%)

Indexing-time per document	CS-users	NCS-users	Total	% of total
Less than 5 mins.	14	3	17	32.7
5–10 mins.	17	4	21	40.3
10–20 mins.	5	4	9	17.3
20–30 mins.	1	1	2	3.9
30–60 mins.	2	1	3	5.8
More than 1 hour	—	—	—	—
Total	39	13	52	100

a. The majority of the sample (73%) take less than 10 minutes for indexing a document; libraries which take more than 20 minutes per document constitute less than one-tenth of the sample.

b. Libraries using CS indexing need much less time per document than those using NCS indexing. The sample was further analysed in terms of the different types of indexing involved (it might be recalled that the majority of the CS-users use a classified index, whereas the NCS-users mostly use an alphabetic index). The results of this analysis show that among the libraries using a classified index, 82.1% use an indexing-time of 10 minutes or less; for libraries using an alphabetic index, the corresponding figure is noticeably lower (66.6%). Only 7.1% of libraries in the former category use an indexing time of more than 20 minutes per document, the corresponding figure for libraries in the latter category being 13.3%. This result contradicts the view that alphabetic indexing is more economic with regard to indexing-time.

Re-indexing

The problem of keeping the indexing vocabulary up to date remains an acute problem for most libraries, irrespective of whether they use classified or controlled alphabetic indexing. One aspect of this problem is that of re-indexing older literature, in the light of subsequent developments in science and their effect on the indexing vocabulary. This is a task no library can entirely avoid, though most tend to postpone it as long as possible. The extent to which special libraries engage themselves in re-indexing activity is shown in Table 9.

TABLE 9
(Level of response: 57%)

	Extent of re-indexing						Total
	Nominal	Moderate	Substantial	Re-indexing after long interval	Total of (1–4)	None	
	1	2	3	4	5	6	7
No. of libraries.	11	6	5	2	24	32	56

a. More than half of the sample (57%) do not have any re-indexing activity.
b. Of those libraries which do carry out re-indexing work, 21% carry out substantial re-indexing on a regular basis, whereas for 46% of the sample this work is nominal.

1.2 *Non-conventional Systems* (*NCS*)

Out of the 98 libraries comprising the main sample, the number of *centres* using non-conventional indexing/searching systems in 1968/69 was 17, while the total number of *systems* was 19, as some centres were using more than one type of system (e.g. optical coincidence and computerized systems). Of the 19 systems reported in 1968/69, 12 were fully operational and 7 were partly operational, undergoing further development. The date by which these 19 systems were operational and also the total number of operational systems in any one year is shown in Table 10.

Despite the small sample size, it is clear that the use of NCS is steadily increasing among special libraries in science and technology. Nearly a quarter of the sample had their systems installed in the year 1968. This trend is confirmed by the data received in 1973. During the period 1968–1973, the number of systems increased by 42% (from 19 to 27).

TABLE 10

	1959	1961	1963	1964	1965	1968	Unspecified date	Total
Number of new systems introduced per year	1	2	3	3	2	5	3	19
Total number of systems operating per year	1	3	6	9	11	16	—	19

System types and their evolution

A further analysis of the same sample in terms of the evolution of different types of system over the period 1959–68 is given in Table 11.

TABLE 11

Type of system	1959	1961	1963	1964	1965	1968	Unspecified date	Total
Optical coincidence cards	1		2	1	2	3	2	11(58%)
Card sorters		1		2		1		4(21%)
Computers		1				1	1	3(16%)
Uniterm cards			1					1(5%)
Total	1	2	3	3	2	5	3	19(100%)

The most popular system seems to be optical coincidence (58%) with storage capacity of 10,000 locations per card. This is no doubt due to the fact that this system combines a number of factors which are operationally very advantageous, such as simplicity, relative cheapness, and versatility. The uniterm system is operated by only one centre in the sample; card sorters and computers make significant but not large contributions.

Number of index-terms per document

An NCS-user employs, on average, 12 subject index-terms per document. A breakdown of this sample (15 centres) into various categories according to the average number of terms used per document is shown as follows:

TABLE 12

No. of subject-terms/document	No. of centres
Up to 5	2
Between 6 and 10	6
Between 11 and 15	2
More than 15	5
Total	15

This shows that nearly half of the sample (47%) uses more than 10 subject index-terms per document. The highest number of terms used by a centre in this sample is 30 per document; 3 centres use on average 20 terms per document. In comparison, the average number of subject entries per document for CS-users is as follows (cf. Table 6): 2 for books; 2.5 for periodical articles; 3 for reports. This is a clear indication of the discrepancy in the operational level of pre-coordinate and post-coordinate systems in respect of the intensity of indexing.

Extent of mechanization

The answer given by the 14 centres which responded to the question 'which portion of the indexing/searching operation in your system is mechanized?' shows that:

a. In all the systems used, the analysis of document-content and its subject-representation is carried out by human indexers.
b. In all the systems except one, only the storage of the information (indexed intellectually) and the search of the index-file are mechanized. Thus, in operational units in 1968/69, the most important and difficult aspect of indexing was still carried out intellectually, and although the mechanized system was providing an efficient service, this was basically a simple, clerical job. A comparison with the 1973 situation shows, however, significant changes in NCS For example, out of the 10 computerized systems in use in 1973, at least 3 (including 1 centre from the 1968/69 sample) had dispensed with human indexing and were relying solely on natural language searching.

System objectives

The responding sample (17 centres, 19 systems) was analysed to determine the purpose for which the systems were being used. The results of this analysis are given below:

TABLE 13

System objective	No. of uses made by the system
Providing current awareness service	5
Publication of regular documentation lists	3
Compilation of bibliographies	6
Answering enquiries	17
Total	31

Most of the 19 systems are multi-purpose; only 7 systems were used for one-purpose, that of 'answering enquiries' (these 7 systems comprise 6 peek-a-boo and 1 uniterm system).

The highest use of NCS indexing/searching is made not for the purpose of producing any standardized service, such as SDI lists, documentation lists, bibliographies, but only in specific response to individual user's enquiries. This confirms a fundamental point, that these systems arose out of the need to respond to each individual user's specific requirements, not satisfied by CS indexing.

Search logic

About two-thirds of the relevant sample (i.e. 11 out of the 17 NCS-users) use boolean logic in their searches, involving the operators OR, AND, NOT, singly or in combination. Three centres did not specify the *ranking order* in which they were using these operators in their searches. An analysis of the use of the different boolean operators and the ranking order as used by the remaining 8 centres is given in Table 14.

a. The most popular search logic appears to be a combination of all operators, that is, OR, AND, NOT. The AND logic is next in popularity, and occupies the first position in the second rank.
b. The weakest position is that of single index-terms. The position of logical sum (A *OR* B), considered solely on its own, is also quite weak; it does not figure in the first rank at all, it occupies the lowest position in the second rank, and first position only in the third rank. The NOT logic, as such, also does not appear to be popular among users. It is less straightforward than the OR or the AND logic; only 5 out of the 8 centres use it, and among this group its ranking is not high.

TABLE 14

(Size of the effective sample: 8)

Type of search logic	Rank order by frequency of use in search							
	1st	2nd	3rd	4th	5th	Rarely	Unspecified	Total
1. Logical sum (A *OR* B)	—	1	3	—	1	1	1	7
2. Logical product (A *AND* B)	4	3	—	—	—	—	1	8
3. Logical subtraction (A *NOT* B)	—	2	—	2	—	1	—	5
**4. Combination of 1, 2 & 3	5	—	—	2	—	1	—	8
5. Use of single index-terms	—	—	2	—	2	1	—	5

**One centre giving this the first rank was, in fact, using a combination of 1 & 2 and *not* of 1, 2 & 3.

2. Results of the 1973 survey and comparison with 1968/69 survey results

In June 1973 a second questionnaire was sent out to the respondents to the earlier one. This questionnaire was much shorter than the previous one, asking what changes, if any, had been made in the classification and indexing system during the intervening period and a few details about the new system, if introduced. A 90% response was received. An analysis of the responding sample into various categories, on the basis of the replies received, is given in Table 15.

A comparison of this sample with the main sample of 1968/69 shows an increase in the number of centres using NCS indexing/searching, 76% over 4–5 years. However, the major portion of the sample, all CS-libraries, remains unchanged. The number of libraries which are now either dead or untraceable is 6; this represents (for a sample of 98 libraries) an annual extinction rate of approximately 1% in the special library field.

TABLE 15

Size of the responding sample (1973): 88
Size of the main sample (1968/69): 98

Library—category	No. of libraries	% of 1968/69 sample
1. CS-libraries which have made no changes in their system since 1968/69	50	51
2. Libraries which have made some changes in their classification system	10	10.12
3. CS-libraries (according to 1968/69 returns) which have now switched over to NCS	13	13.25
4. NCS-libraries (according to 1968/69 returns) which are still active users of these systems *a*. Those who have made no changes: 10 *b*. Those who have changed over to more sophisticated systems: 3	13	13.25
5. Libraries dead or untraceable now	6	6.12

N.B. Category 2 overlaps other categories; hence the total no. of libraries exceeds 88 in col. 2.

Changes in classification

There has been no major change in this area. Seven centres have abandoned the classification schemes they were using in 1968/69 and have adopted new schemes. It is difficult to discern any firm trend in the way these changes have occurred. Four centres have partly changed to UDC (3 from 'own scheme'; 1 from DC). However, of these 4, one centre is using UDC for books only, another is using UDC alongside classification schemes derived from other sources, and the third centre is deviating from UDC because its English edition is out-of-date. In another group, one library (specializing in electronics) has changed over from UDC to Dewey 18th edition and another (a public technical library) is planning to do so in order to use the BNB-MARC data base.

Current users of NCS

Twenty-six libraries belong to this group in 1973, and constitute more than a quarter of the original sample of 1968/69. It is this group only that is undergoing radical changes and experimenting with storage and retrieval operations. As shown above, there has been little change in the world of the CS-libraries (even the change-over from one classification scheme to another, discussed earlier, has been carried out mainly by the NCS-users: 4 out of the 7 centres involved belong to this category).

In view of this, the comparative study of the surveys of 1968/69 and 1973 will henceforward be concerned solely with NCS-users.

Changes in distribution-pattern in different categories

A detailed analysis of this group in terms of some of the basic categories used earlier, such as, 'management', 'activity', 'discipline', shows the following pattern:

Management. Libraries in private industry are characterized by more vigorous use of NCS than those found in other categories. They account for more than two-thirds of all NCS-users, although they comprise no more than 49% of the main sample. This situation remained unchanged between 1969 and 1973. However, the position of the government libraries, already weak in 1968/69. was further weakened in 1973 (among the new users there is only 1 out of 13, although they account for nearly a quarter of the main sample). This deterioration of government libraries deserves further investigation on a broader basis.

Activity. In the 1968/69 sample, 70% of the NCS-users were drawn from the applied research field. In the integrated sample of 1973, this proportion has been substantially reduced (46.1%), although applied research libraries still remain the dominant group.

A closer examination of the data shows that there are two distinct reasons for this sharp decline. First, 4 libraries were eliminated in 1973 from the integrated list (being dead or untraceable) and they all belonged to the applied research field; hence their loss reduced, somewhat artificially, the share of libraries in this category in the overall sample. The second reason is the increasing use of NCS by libraries in all other categories, notably those in the field of 'manufacture' whose share rose from 12% (1968/69) to 27% in the integrated sample of 1973 and to 38% in the sample comprising the new users only (1973). The share of libraries in basic research rose from 6% in 1968/69 to 11.5%, and of libraries in information service from 12% to 15.4%.

This seems to indicate that the pressures which first made libraries in the applied research field adopt NCS indexing/searching, are now at work over a much wider field of activity; special libraries in all fields are now turning increasingly towards these new systems.

Discipline. The trend discerned above is found to be asserting itself also over a wider range of disciplines. In the 1968/69 sample, 88% of all NCS-users were concentrated in only *two* subject fields; chemistry and physics and their associated technologies. This is no longer true of the 1973 integrated sample. The shares of most disciplines are now generally commensurate with their proportion in the main sample: e.g., science and technology (general) 11.5% against 11.25%; chemistry and chemical engineering 23.1% against 22.5%; engineering (general) 11.5% against 10.25%. This is due to the fact that during the intervening period all the disciplines which were under-represented in the 1968/69 sample have strengthened their position considerably. Thus, science and technology (general) rose from 6% to 15.5% in the sample of new users; engineering (general) also rose from 6% to 15.5%; and miscellaneous crafts, techniques, etc. from 0% to 23%. Physics is still the dominant group, but its share has been reduced from 47% to 42.4%. However, there has been no change during the last 5 years in the biological and medical sciences, where they do not have a single library using NCS.

TABLE 16

Total no. of centres: 26

Nature of the input data									
Selective material only							Almost all current material	Unspecified	Total
Internal reports	Patents	Journal articles	Report literature	Items selected from own documentation list	Slides	Books			
8	2	4	5	3	1	2	3	3	31

N.B. The number of uses made of different types of input data exceeds the total number of centres using the data, as some centres store more than one type of material in their indexing/searching systems.

Input data

A large proportion of the use (83%) of NCS is confined to a selected portion of the library's total holdings. The pattern of use of the different types of input data in NCS storage/retrieval is shown in Table 16.

All current acquisitions of a library are used as input to the NCS in less than 10% of cases. This is because: not all types of material need to be exploited at the highest level; the data to be stored in the NCS need special treatment which involves extra cost and labour; the storage capacity of the system may be fairly limited, as in the case of optical coincidence cards (e.g. 10,000 locations in a standard card). Discrimination in the selection of material does not apply, *with equal stringency*, in a computerized system; all 3 cases in which the library's entire current acquisition is used as input relate to computerized systems. On the other hand, where only the organization's own internal reports (a highly restricted category of material) are used as input, out of 8 such uses, 6 relate to optical coincidence systems and only 1 to a computerized system.

System-types and their evolution during 1968–1973

In 1968/69 there were 17 centres using 19 NCS indexing/searching; by 1973 these figures rose to 26 centres and 27 systems. At the same time 4 centres dropped out of the 1968/69 sample (3 centres were dead or untraceable and 1 centre reverted to CS when its affiliation to the R & D organization was terminated), thereby reducing its strength to 13. An analysis of the systems operating in 1968/69 and in 1973, in terms of the different system-types, is given in Table 17.

TABLE 17

Type of system	1968/69 sample		New systems notified in 1973 (c)	Total no. of Centres active in 1973 (b+c))
	Systems active in 1968/69 (a)	Systems active in 1973 (b)		
1. Optical coincidence cards	11(58%)	6	7	13(48%)
2. Computers	3(16%)	5	5	10(37%)
3. Card sorters	4(21%)	1	—	1(3.75%)
4. Uniterm cards	1(5%)	1	—	1(3.75%)
5. Unspecified	—	1	1	2(7.5%)
Total	19(100%)	14	13	27(100%)

N.B. The figures in this Table refer to systems and not centres.

Optical coincidence system

In 1968/69, 11 out of 19 systems (58%) were based on optical coincidence. In 1973, 13 out of 27 systems (48%) belong to this category. However, this figure is somewhat misleading, in as much as 3 out of the 4 centres which dropped out in 1973 from the 1968/69 list were users of optical coincidence systems. Their elimination has therefore resulted in an accidental reduction of the share of this system in the sample. This is confirmed by the continuing popularity of optical coincidence systems among the 1973 sample of new users; in this group 7 out of 13 systems (54%) are based on optical coincidence.

Computerized systems

The data received in 1968/69 and in 1973 show that the number of computerized systems in the main sample increased *ten* times between 1961 and 1973, and more than *three* times between 1968/69 and 1973. This increase has been brought about both by new centres entering the sample as well as some of the older NCS-users switching over from other types of NCS (e.g. card sorters, optical coincidence cards) to computerized systems. Two centres of the 1968/69 sample belong to this category. In 1968/69, there was no on-line computer system in the sample; in 1973, the sample has *two* on-line systems and both are operational. Also, in 1973 *one* COM (Computer-Output-Microfilm) system has appeared which is also fully operational.

Card sorters

In 1968/69, there were 4 centres using card sorters. During 1968–1973, no new centre has adopted this system. Out of the old 4 centres, 2 centres have given up this system and changed over to computers; 1 centre is now untraceable, and only 1 centre is known to be still using the system. Thus in 1973 only 1 out of 27 systems uses a card sorting machine.

Uniterm cards

In 1968/69, only one centre was using a modified uniterm system. Since then, there has been no further addition to this group; the original centre is still using the system for processing its internal reports.

Retrieval language in computerized systems

An analysis of the retrieval language used by the computerized systems is given in Table 18. Two centres have been excluded from this sample, as they are using the computer only for the production of a catalogue of their books.

a. In operational units, the use of natural language as a practicable searching medium now seems to be an established fact and is on the increase (in 1968/69, only one centre was using natural language searching).
b. Although it is possible to use any retrieval language (e.g. classified or alphabetic) in a computerized system, the majority of users appear to favour the direct alphabetic approach.
c. A classification scheme alone as a retrieval language is not used by any centre in the sample. Only one centre makes use of classification along with other alphabetic descriptors (such as keywords, titles, authors). Since this is an on-line system, it would be interesting to know, after the system has worked for some time, the *users'* preferences for the different types of retrieval language permitted by the system.

TABLE 18

(Total no. of centres: 8)

Nature of the retrieval language	No. of centres	Remarks
1. Classification scheme only	None	
2. Classification scheme *plus* keywords and other alphabetic descriptors (e.g. titles, authors)	1	This centre uses an on-line system
3. Thesaurus	2	One of the centres relies on natural language as well to keep the thesaurus up to date
4. Controlled alphabetic vocabulary	1	
5. Natural language *plus* controlled alphabetic vocabulary	1	
6. Natural language only	3	(i) One centre uses all library stock as input (ii) One centre uses N.L. for its KWIC index
Total	8	

Acknowledgements

The two surveys whose findings are partially reported in this paper are part of a broader research project which is now being conducted at the School of Librarianship of The Polytechnic of North London. My sincere thanks are due to all the centres participating in these surveys and to Mr D. J. Foskett for his continued help and guidance throughout the course of this research project.

REFERENCE

1 BHATTACHARYYA, K. Some general characteristics of special libraries in science and technology in the U.K. *J. Documentation,* 1972 28(3), 214–232.

Summary of the major findings

Results of the 1968/69 survey

1. The most significant finding of this survey has been the identification of libraries in the applied research field as a distinct category, characterized consistently as the most vigorous users of information measured in terms of a wide range of indexing/searching characteristics.

2. The indexing/searching behaviour of the sample as a whole displays the following pattern:

(i) About one-fifth of the sample uses more than one indexing system.

(ii) 26 different types of criterion are used for the shelving of literature (books, periodicals, reports, etc.); of these, there are 11 types each used by one centre only.

(iii) UDC is used by the largest proportion (40%) of the sample.

(iv) 62% of all the systems use classified indexing; however, among the users of NCS, 68% use alphabetic indexing.

(v) 47% of NCS-users employ indexing at more than one level (i.e. title/abstract/whole document), while only 15% of CS libraries do so.

(vi) As regards the source from which index-terms are derived, the sample is almost equally divided into two groups; those who use, mainly or partly, natural language and others who use controlled vocabulary.

(vii) Nearly two-thirds of the sample use less than 2000 index terms.

(viii) About one-fifth of the sample uses more than 4 index cards per book; the corresponding figure for reports is about half of the sample.

(ix) 73% of the libraries need less than 10 minutes for indexing a document.

(x) 57% of the libraries do not have *any* re-indexing activity; about 75% do not seem to have any *regular* re-indexing activity.

3. The indexing/searching characteristics of the sub-sample using NCS storage and retrieval are as follows:

(i) 17 out of 98 libraries belong to this category and use 19 systems, of which 58% are accounted for by optical coincidence cards, 21% by card sorters and 16% by computers.

(ii) 47% of the centres use more than 10 subject index-terms per document, the average for all the NCS users being about 12 terms; the highest number of terms used by a centre is 30.

(iii) More than half of all the uses being made of the 19 systems relates to answering enquiries, rather than providing SDI services or compiling bibliographies.

(iv) About two-thirds of the sample use boolean logic in their searches, the AND logic being most extensively used and OR and NOT logic much less so.

Comparison of the 1968/69 and the 1973 surveys

1. The most noticeable change has occurred in the group using NCS indexing/searching systems; 13 new centres had entered this group during this period, raising the number of systems in use to 27 (4 old centres were either dead or untraceable).

2. Among the conventional libraries there was very little change, with only minor variation in classification schemes being used.

3. Among the NCS-users, the significant trends are as follows:

(i) The use of NCS is now extending beyond the applied research libraries and invading libraries in other categories as well, e.g. in manufacture.

(ii) The leadership of the applied research libraries over other categories still remains unaffected, now in respect of computerized systems.

(iii) The largest proportion of all NCS users (48%) still use optical coincidence cards; the number of computerized systems has risen from 3 to 10, while card sorters and uniterms seem to be disappearing from the field.

(iv) Among the computerized systems, there are now *two* operational on-line systems and *one* COM system (previously there were none). The retrieval languages used by computerized systems are predominantly alphabetic, with no centre using a classification scheme alone, and three centres relying solely on natural language searching.

BRIEF REVIEWS

DOWNS, R. B. *and others*. American library resources: a bibliographical guide; Supplement 1961–1970. Chicago, ALA, 1972. $15.00. ISBN: 0 8389 0116 6.

This volume is the second supplement to *American Library Resources; A Bibliographical Guide*, published by the American Library Association in 1951. The scope and format are essentially the same as for the basic volume; a listing of printed library catalogues, union lists of books and periodicals, descriptions of special collections, surveys of library holdings, etc. The period covered by this supplement is 1961–1970, with the inclusion of a few earlier and later works. The number of works listed totals 3421, a substantial increase over the 2818 of the 1950–61 supplement, and almost two-thirds of the total of 5578 publications recorded in the original volume.

A fairly detailed Contents list supplies item numbers for the subject subsections within the broad classification headings, and the main body of the volume is classified broadly by the Dewey Decimal System, with each entry assigned a running number. There is one index, of authors, editors, compilers, libraries and other organizations, subjects, types of material, and occasional titles.

Within the subject sections the references are listed alphabetically by author. Each entry provides full bibliographical details and short annotations where necessary, for instance listing number of references or titles contained in the publications listed, or supplementary details such as special contents or indexes.

This whole set of volumes is inherently more useful in America than elsewhere, but it still has great potential value for researchers in other parts of the world, providing one source in which listings of the ordinary resources and special interests of American libraries are brought together in a usable fashion. As such it deserves its place amongst the international collections of standard library reference books.

CLARKE, B. K. *ed.* Retail trade developments in Great Britain 1973–1974. Epping, Gower, 1973. £17.50. ISBN: 0 7161 0128 9.

The first edition of *Retail Trade Developments in Great Britain* was published in August 1971 (and reviewed in *Aslib Proceedings* January 1972). Naturally, many changes and developments in this sector have occurred since that time, and this second edition aims to analyse and comment on these trends, at the same time maintaining the basic format and information provided in the previous edition.

Some changes have been made in certain sections where particular interest has been identified, for instance there is greater emphasis on household goods, the development of self-service stores and supermarkets, and unemployment figures.

The review is divided in three main parts: national trends; regional studies; company analysis. The 'National Trends' section is subdivided into 'An Economic Analysis of the Retail Trade' and 'Development in Shopping Patterns'.

The Preface provides a summary of the survey findings on the trends in re-tailing from 1972 to the second half of 1973, with a short section describing 'Future Prospects'. The information provided in the Review is based on research covering companies and trade associations as well as statistics published by such bodies as the Department of Employment and the Department of Trade and Industry through H.M.S.O. Statistics are generally provided in tabulated form with their source quoted.

The survey specifically states that "Emphasis is placed on the presentation of data in tabular and graphical form to assist in swift understanding and for easy reference". Regretfully, it seems necessary to repeat a comment made in the Aslib review of the previous edition: that this publication contains a great amount of useful statistics and comment not to be found in a single source elsewhere; nevertheless it seems quite likely that a good part of the contents will be unused because of the lack of indexes. It is not possible for the librarian/information officer/research worker to familiarize himself with all the contents of every reference book; the knowledge that a sizeable reference work does not contain any index (even if the Contents list is fairly detailed) is most off-putting, even in a clearly set-out publication like this one.

ANDERSON, I. G. *ed.* Councils, committees & boards. 2nd ed. Beckenham, Kent, CBD Research, 1973. 327p. £7.50. ISBN: 900246 14 6.

The second edition of CBD's *Councils, Committees and Boards* is a welcome addition to any reference collection. Basically the work maintains the pattern of its predecessor: an alphabetical listing of national and regional bodies in the United Kingdom giving details of address, establishment, objectives, activities and publications, based principally on information returned in questionnaires by the bodies concerned. The listing is completed with indexes to abbreviations, chairmen and subjects.

The editor claims that the compilation represents the position as in mid-May 1973 and a separate insert prepared in mid-June 1973 provides supplementary entries "to ensure that users of *Councils, Committees and Boards* have the most up-to-date information possible at the date of publication". For a number of bodies which have ceased their operations since the date of the first edition, an entry is provided in the second edition giving reference to the information in the earlier publication. In some cases the second edition has streamlined the first, for example, the entry for the National Economic Development Council, and the editor has obviously wrestled thoughtfully with the traditional problem of how much of what to include. Those users familiar with the earlier work will appreciate the care that has been taken in this thorough revision, whilst those encountering the publication for the first time will find a concise compilation of information not available in other published sources.

THE LIBRARY, UNIVERSITY OF READING. Historical farm records: a summary guide. University of Reading, 1973. 320p. ISBN: 0 7049 0138 2.

This catalogue, condensed from the more detailed *Catalogue of Farm Records*, maintained in the University Library, is a guide to the manuscripts and other material collected by the Institute of Agricultural History and the Museum of

English Rural Life and held in Reading University Library. Most of the material listed relates to southern and eastern England and dates from the 19th and 20th century. Farmers' records comprise the bulk of the material.

The entries are arranged by counties alphabetically. Each collection receives a county number e.g. BED 4. The collections are subdivided into categories e.g. leases, accounts, maps etc. The work has two indexes. The first gives references to all individual farms mentioned in the catalogue, arranged by county and place. The second index gives references to all place names and a selection of personal names.

This catalogue should be a useful guide to the relatively few records of practical farming which have survived.

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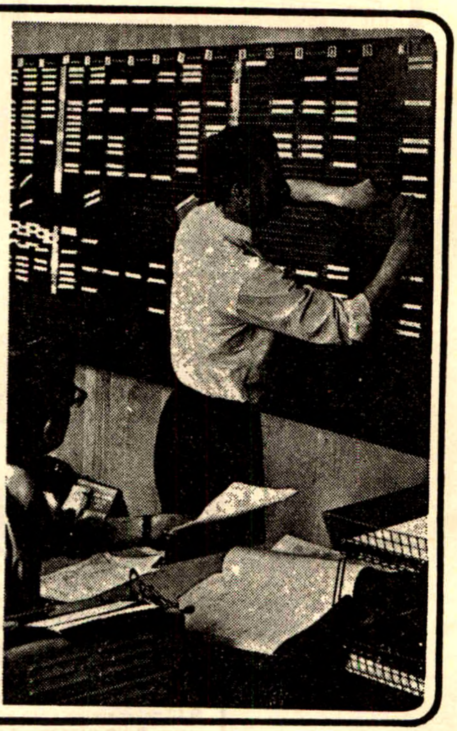

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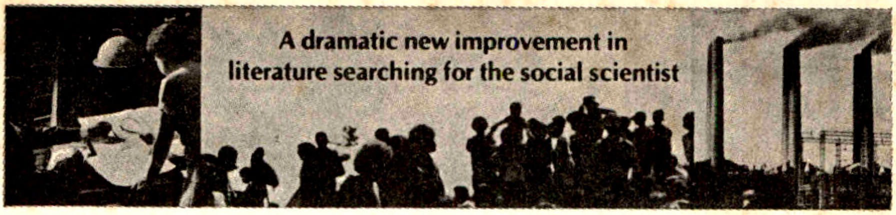
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A contribution to the comparison of the usefulness of the data bases of Excerpta Medica and MEDLARS in biomedical literature retrieval
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CALCUTTA UNIVERSITY

A contribution to the comparison of the usefulness of the data bases of Excerpta Medica and MEDLARS in biomedical literature retrieval

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The results of searches on biological, medical and veterinary subjects by both the E.M. automated retrieval system and MEDLARS were compared. Of a total of 60 E.M. searches 23 were selected for the comparative study. Seven were eliminated because these needed specific terms not present in the MEDLARS terminology and 30 were omitted for other reasons. In 17 searches MEDLARS produced more relevant references than E.M. On the other hand in 12 searches the precision of E.M. was higher than that of MEDLARS. An average precision of 55 per cent was found for E.M. and of 38 per cent for MEDLARS. In 12 searches the cause of the failure to retrieve known relevant references was investigated. In MEDLARS 28 per cent was due to inadequate journal coverage and 72 per cent to indexing or searching failures (total 71 failures); in E.M. these percentages were 8 and 92 respectively (total 160 failures), the last percentage including an unknown proportion due to selective indexing of journal contents. Of 226 relevant references from E.M. and 467 relevant references from MEDLARS (the total retrieved in 15 searches), 94 references were duplicated. Recall figures were estimated: an average recall of 18 per cent was found for E.M. and 33 per cent for MEDLARS. Search strategies and indexing of overlapping references were compared. An estimate was made of the extension ratios of 12 searches. This measure averaged 1.9 for E.M. and 2.8 for MEDLARS.

1. Introduction

DURING THE last quarter of 1972 and the first half of 1973 the authors participated in a user study of the Excerpta Medica (E.M.) automated retrieval system. Questions were formulated at a terminal placed in the University Library at Utrecht, during on-line interaction with the databank installed in Amsterdam.

A comparison is presented here of the results of a sample of the searches on E.M. included in the study with those of parallel MEDLARS searches.

The data bases of both systems were searched retrospectively.

The main aim of the comparison was to inform future users about the nature and capabilities of both systems, rather than to obtain detailed and decisive evaluations. Nevertheless, the results obtained by comparing the retrievals and the consequent evaluations appear to reveal some interesting provisional conclusions.

As a consequence of the introductory character of the project the requests were gathered at random from staff members and research workers in the biological, medical and veterinary departments of the University of Utrecht and of other organizations. The selection of the searches, always run initially on the E.M. system, was done rather arbitrarily in that four categories of searches were omitted:

(a) those that had failed to retrieve any references ('zero retrievals');
(b) those that could be answered easily by a manual search of Index Medicus;
(c) those searches that needed specific terms which were provided by the E.M. thesaurus, but which were lacking in the MEDLARS terminology;
(d) 9 searches that had a purely demonstrative character (5 of them followed an earlier MEDLARS search with a different time coverage), 10 searches on which either incomplete or no evaluations were received and 2 questions on which parallel MEDLARS searches were planned but not executed, as the enquirer did not wish this to be done.

Of the total of 60 E.M. searches, 6 came within category (a), 3 in category (b), 7 in category (c) and 21 in category (d). In general, those searches were selected that were expected to have equal formulation and retrieval success in both systems.

The results of the remaining 23 parallel searches are presented and discussed below.

As far as is known no previous comparisons are reported on *complex* questions answered by both of these large medical data bases. The study by Goode[1] comprises a comparison of citations on epilepsy as to number, overlap and timeliness. A considerable difference in approach lies in the fact that in Goode's study the E.M. citations were taken from a manually edited specialized periodical publication, and the MEDLARS citations were retrieved mechanically out of the complete data base, whereas in this study machine search on both systems was carried out.

Smith[2] evaluated several computer data bases including E.M. and MEDLARS, but search subjects were restricted to pharmaceutical compounds; the number of references, number of unique references and costs were given. A comparative study on the cost effectiveness of a great variety of current awareness sources was made at The Wellcome Foundation (Ashmole[3]). In this study only one search topic, a drug compound, was investigated. The search strategies for Excerpta Medica's DRUGDOC, as well as for MEDLARS, were very simple. DRUGDOC generated 70 per cent and MEDLARS 36 per cent of the total number of relevant articles found by all the sources together. In the 187 E.M. and 97 MEDLARS references found, 61 and 9 respectively were unique, and 77 were common to both. DRUGDOC produced almost twice as many references as MEDLARS, but the cost per reference was more than four times as great. The authors suggest that the response from MEDLARS would have been better, had a specific search term been available. In addition they remark that many of the unique references provided by DRUGDOC came from minor journals and some of these were of limited significance.

Wilkinson[4] compared the results of manual searches in Drug Literature

Index and Index Medicus on the toxicity of 8 drugs. Index Medicus and Drug Literature Index yielded 198 and 309 references respectively, from which only 70 were found in both data bases.

It must be stressed that this report has to be considered as a tentative investigation carried out as a by-product of demonstrating these systems to interested enquirers, and is exploratory rather than systematic. As the searches included were not a valid sample, a thorough statistical treatment of the results was not undertaken and no final conclusions could be drawn. It is hoped, however, that this first impression of the strong and weak points of both systems is useful, and will be supplemented in a later, more systematic study.

2. Methods

On-line access to the data base of E.M. was available during one hour a day, whereas MEDLARS was searched off-line.

2.1. Search formulation

Questions were formulated by means of the instructions provided by the systems. In the case of E.M. these instructions were presented on the screen, whereas for MEDLARS a printed search manual was available. The search-formulator had some experience in MEDLARS search formulation. The operational activities with E.M. had just started. The enquirer was sometimes present during formulation. In other cases a discussion on the search subject with either the actual enquirer or an information officer, librarian or other intermediary preceded construction of the search formulation.

2.1.1. Excerpta Medica

Searches were formulated as far as possible before the daily period of access. In formulation index-terms (= preferred terms): R, classifications: *P*, and item-index numbers: *U*, could be used. The logical operators AND, OR and NOT were available. AND had to be used between associated R and *P*, *P* and *U*, and R and *U* elements.

In addition, though the use of AND and NOT was allowed up to four times in one profile to link either terms or classifications or item-index numbers, OR was permitted once only. As the use of the operator OR was restricted, a search formulation generally consisted of several profiles and the references produced by all the profiles were, together, considered to be the total number of references for that search.

A serious problem in preparing a search formulation was that the list of the terms used in indexing (= MALIMET, *Ma*ster *Li*st of *Me*dical *T*erms) was not at hand, although browsing through the thesaurus could be done on-line. It was possible to display on the screen either a single term or part of the thesaurus in alphabetical order. After selection of terms from the latter, information was given on the frequency of use of each term. Detection of the appropriate search terms was hampered by lack of cross-references. It was sometimes found that 'useful' terms were noted whilst running over the index-terms of the retrieved references.

It must be stressed that the choice of index-terms in search formulation was greatly dependent on the inventiveness of the formulator. In addition on-line consultation of the thesaurus took a lot of terminal-time.

The classification system and the list of item-index numbers were at hand in printed form. In the search strategies an attempt was made to build in all possible approaches that were present in the E.M. system. This led, in some searches, to a large number of profiles, whereas in other cases, when a specific request was represented by a specific term, only one profile was necessary.

To estimate the number of references a search would retrieve, a search could be processed, in the real time mode, on a portion of the data base. The entry-numbers of references retrieved from the sample of the data base that was available on-line were displayed on the screen. During the experiments the sample consisted of the 1971 file and part of the 1970 file, together comprising about 250,000 references.

After the command 'DISPLAY' the references could be shown on the screen complete with index-terms, classifications and item-index numbers but without abstracts.

Both the size and the contents of the retrieval could be adjusted as required by the enquirer by 'widening' or 'narrowing' the search strategy. All searches were processed in the batch mode in Amsterdam during the weekend following on-line formulation.

2.1.2. *Medlars*

The selection of terms was greatly facilitated by the availability of the published list of *M*edical *S*ubject *H*eadings (MeSH), the hierarchical classification of these terms (the tree structures), and the list of subheadings, providing main headings: *M*, categories: *C*, and subheadings: *S* elements, respectively.

As there were no restrictions on the use of the logical operators, each request could be completely expressed by one formulation. To estimate the number of references expected there were two measures available: first a list with the frequency of use of each MeSH term, and secondly printed Index Medicus which gives indications of number and relevance of retrieved references. By these methods the formulation was adjusted to the desired retrieval size. The formulations were written on forms; punching onto tapes and processing in batches was done at the BMDC-Karolinska Institutet in Stockholm.

In Table 1: Overall results, the search strategies are reported in abbreviated forms referring to the total number of R, *P* and *U* elements and the total number of *M*, *C* and S elements used in the formulations. It was not feasible to record all logical connections between the elements. It must be stated that the operator NOT was never used.

2.2. *Time coverage*

An essential condition for the comparison was similarity of search periods in the data bases. Time coverage is determined by computer entry dates, beginning with the entry date where the search starts (this date had to be stated by the enquirer), and ending with the latest entry date available for retrieval. In the case of E.M. it was assumed that this period ended at an entry date about 10 days before the search was processed; in MEDLARS the period ended at the last available complete month.

2.3. Evaluation

Printouts of the references retrieved were evaluated by the enquirer in cooperation with the search formulator. In addition to the title and the bibliographic data the E.M. printouts record classifications, preferred terms, secondary terms, item-index numbers and, depending on the importance of the article, an abstract. In MEDLARS printouts references are supplied with main headings, which may be marked with an asterisk, and subheadings. The asterisked headings indicate that the reference was entered in Index Medicus under that heading, and may be taken as indicating the most important concepts of the article.

By means of these data the references retrieved were evaluated. Each reference was checked as to whether or not it was of relevance to the underlying question. Additional information was requested on the evaluation forms. In both the E.M. and MEDLARS forms the number of *new* relevant references as well as the number of *important and new* relevant references were requested, whereas in the MEDLARS form only the number of *not relevant but interesting* ('serendipity') references was requested. As this feature was missing in the E.M. questionnaire data on the serendipity-factor could not be included in this comparison.

In both forms the number of missing citations was requested. These references, missed by the automatic retrieval procedure, could have been collected manually by the enquirer by scanning journals of personal interest, by personal communications with colleagues, etc. In many cases, when the request was made as a trial relating to an arbitrarily interesting problem, the enquirer was not able to give the exact number of missing relevant references. In other cases inadequate indexing of the enquirer's personal card index system caused this deficiency.

As to the 'newness' similar problems were experienced. Frequently all references were new because the question was 'new'; sometimes a distinction had been made between either 'new and known' references or 'new and ought to be known' references.*

Therefore the data on 'extension', a factor that will be discussed below, concern only a limited portion of the total number of evaluations. The same holds true for data on 'importance', as this criterion appeared to be rather subjective and more difficult to judge without reading the complete text of the article concerned.

2.4. Determination of overlap

It was of great interest to determine the duplicate references (the references retrieved by both systems) in each search. This overlap can contain both relevant and non-relevant references. In 8 searches the evaluation was not specified by reference; consequently in these cases the relevance of the overlapping references could not be determined. The number of unique relevant references from each system was recorded as a range, limited by the extreme values according to maximum and minimum relevance of the overlap. In the remaining 15 searches references were evaluated individually; the relevance of the overlap and consequently the number of unique relevant references from each system was established.

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* This distinction had to be made because it was found that, during evaluation of a large printout, an enquirer was inclined to judge as 'known' those relevant references published in journals which were available in his library. These references were included in the group of 'known' references.

3. Results

3.1. Unique relevant references

From the user's viewpoint it was considered that the number of relevant references was the most important criterion for the retrieval capability of the system. In comparing the searches the numbers of unduplicated (unique) relevant references are, in the authors' opinion, particularly significant as a measure of retrieval efficiency.

In order to survey the figures, the searches were arranged in 3 groups: A, B and C. The searches of group A were characterized by a 'low' relevant unique output from E.M. relative to a 'high' relevant unique output from MEDLARS (ratios between 0 and 0.8). The searches of group B were almost equally successful in both systems (ratios between 0.8 and 1.2), whereas in group C the results were in reversal to those of group A (ratios 1.2 and higher).

As stated above, the number of unique relevant documents had to be approximated in 8 searches as a range between a minimum and a maximum value. In these cases the mean of these values was used to calculate the desired ratio.

The figures are shown in Table 1. Out of the total of 23 comparisons, 17 appeared in group A, 3 in group B and 3 in group C. Detailed study indicated that the difference in the productivity of the systems was almost independent of the subject matter of the searches.

3.2. Precision

In addition to the number of relevant references retrieved, their precision is considered to be a criterion for the effectiveness of a data base. Precision is defined as the percentage of relevant references in the total number of references. A low precision means that the enquirer had to evaluate many non-relevant references.

The searches within group A, B and C were arranged in groups x, y and z according to their precision. This arrangement was comparative, and the sequence was 'high' precision in E.M. relative to 'low' precision in MEDLARS (group x, ratios 1.2 and higher), approximately equal precision in both systems (group y, ratios between 1.2 and 0.8) and 'low' precision in E.M. relative to 'high' precision in MEDLARS (group z, ratios between 0.8 and 0).

There were 12 searches in group x (10 of group A, 1 of group B and 1 of group C); 11 searches in group y (7 of A, 2 of B and 2 of C); no searches in group z (see Table 1).

The results showed that of the 23 searches, 17 yielded ***more*** relevant references from MEDLARS, whereas 12 were performed with ***greater precision*** in the E.M. system. The precision of the E.M. retrievals averaged 55 per cent with extreme values 21 per cent and 100 per cent, whereas the MEDLARS precision averaged 38 per cent with extreme values 0 per cent and 100 per cent.

TABLE 1: *Overall results*

Search			Data base	Time coverage	Search elements	Number of profiles	Retrieved refs.	Relevant refs.	Precision (%)	Precision ratio	Unique refs.	Unique relevant refs.	Unique relevance ratio
No.	Subject	Group											
1	Cytology of trachea epithelum.	A/x	EM	Jan '69–13/11 '72	1R oP 4U	3	13	9	69	5.3	2	0–2	0.02
			M	Jan '69–Nov '72	8M 2C 10S	1	433	58	13		422	47–58	
2	Aspergillosis in birds.	A/x	EM	Jan '69–14/11 '72	7R oP 2U	4	20	15	75	3	13	8–13	0.6
			M	Jan '69–Nov '72	7M 1C oS	1	84	21	25		77	14–21	
3	Obesity in babies.*	A/x	EM	Jan '69–26/11 '72	4R 3P 1U	6	47	21	45	2	35	9–21	0.7
			M	Jan '70–Feb '73	3M oC oS	1	129	29	22		117	17–29	
4	Corpus callosum abnormalities.	A/x	EM	Jan '69–24/10 '72	5R 1P oU	2	4	2	50	2.1	2	0–2	0.1
			M	Jan '69–Dec '72	6M 1C 3S	1	33	8	24		31	6–8	
5	Respiratory quotient in birds and rats: catabolism after fasting.*	A/x	EM	Jan '69–15/10 '72	3R oP 2U	1	10	5	50	2	9	4	0.2
			M	Jan '69–Jan '72	10M 2C 1S	1	72	18	25		71	17	
6	Visual illusions and eye movements.	A/x	EM	Jan '71–June '73	2R 4P oU	3	14	3	21	1.5	13	3	0.2
			M	Jan '71–May '73	6M 1C oS	1	105	15	14		104	15	
7	Blood pressure dynamics of hypertensive patients after myocardial infarct.	A/x	EM	Jan '69–10/10 '72	2R 4P oU	2	21	8	38	2.4	19	7	0.5
			M	Jan '69–Oct '72	3M 2C oS	1	97	16	16		95	15	
8	Determination of alkaline phosphatase isoenzyme.	A/x	EM	Jan '69–30/10 '72	1R 2P oU	1	44	29	66	2	16	10	0.2
			M	Jan '69–Dec '72	2M oC 4S	1	209	69	33		181	50	
9	Esterases and cardiovascular physiology.	A/x	EM	Jan '71–June '73	3R 2P oU	2	20	11	55	2.7	14	9	0.4
			M	Jan '71–May '73	1M 4C 4S	1	141	28	20		135	26	
10	Changes in intramuscular nerve endings and motor endplates with age.	A/x	EM	Jan '69–24/10 '72	7R 1P 1U	8	7	4	57	14.2	2	0–2	0.4
			M	Jan '69–Dec '72	5M oC 1S	1	117	5	4		112	0–5	
11	Airborne infection.	A/y	EM	Jan '69–30/10 '72	2R oP oU	1	52	17	33	1.2	31	9	0.2
			M	Jan '69–Dec '72	3M 1C 1S	1	261	70	27		240	62	
12	Endocarditis lenta after tooth extraction.	A/y	EM	Jan '69–17/10 '72	3R oP oU	1	3	3	100	1.1	2	2	0.1
			M	Jan '69–Dec '72	2M 1C oS	1	18	16	89		17	15	

13	Mucus analysis in cystic fibrosis.	A/y	EM	Jan '69–13/11 '72	2R oP 2U	2	11	5	45	1	8	2	0.2
			M	Jan '69–Nov '72	5M 2C 2S	1	33	15	45		30	12	
14	Cellular biology and pathogenicity of amoeba.	A/y	EM	Jan '69–12/11 '72	7R 1P 3U	11	132	68	56	0.8	88	24–68	0.2
			M	Jan '69–Nov '72	14M 1C 5S	1	412	284	69		368	240–284	
15	Interaction between exogenic toxins and small intestine epithelium.	A/y	EM	Jan '69–7/11 '72	4R 7P 2U	5	25	18	72	0.9	24	17	0.6
			M	Jan '69–Nov '72	1M 2C 2S	1	34	28	82		33	27	
16	Nerve growth factor.*	A/y	EM	Jan '69–12/12 '72	1R oP oU	1	96	89	93	1	44	41	0.7
			M	Jan '70–March '73	1M oC oS	1	118	108	92		66	60	
17	Ethical and economical aspects of terminal care.	A/y	EM	Jan '69–23/10 '72	2R 2P oU	1	16	4	25	0.9	15	3	0.1
			M	Jan '69–Dec '72	7M 2C oS	1	201	58	29		200	57	
18	Motor neurons: cytology and pathology.	B/x	EM	Jan '69–21/11 '72	6R 3P 2U	6	66	20	30	3.7	33	0–20	1.1
			M	Jan '69–Dec '72	1M 3C 2S	1	230	19	8		197	0–19	
19	Behavior therapy of asthmatics.	B/y	EM	Jan '69–13/10 '72	2R 3P oU	2	8	8	100	1	6	6	1.2
			M	Jan '69–Dec '72	2M oC oS	1	7	7	100		5	5	
20	Pentobarbital and heart output in dogs.	B/y	EM	Jan '69–17/10 '72	2R oP 1U	1	17	8	47	1.1	12	6	0.9
			M	Jan '69–Dec '72	3M oC 1S	1	21	9	43		16	7	
21	Alkali metal burns, especially sodium burns.	C/x	EM	Jan '69–30/10 '72	3R 4P oU	2	26	6	23	undefined	26	6	undefined
			M	Jan '69–Nov '72	1M 1C 1S	1	11	0	0		11	0	
22	Effects of succinylcholine on the heart.	C/y	EM	Jan '69–22/10 '72	3R 2P oU	2	54	36	67	1	51	33–36	2.1
			M	Jan '69–Dec '72	1M 1C 1S	1	27	18	67		24	15–18	
23	Tetracyclines in milk.	C/y	EM	Jan '69–13/11 '72	3R 2P oU	3	31	12	39	1.1	26	7	1.4
			M	Jan '69–Dec '72	3M 1C oS	1	28	10	36		23	5	

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* Although the time coverage differed substantially, these searches were incorporated in the comparison as the smaller time coverage involved the greater yield

3.3. Overlap and recall

It is a striking fact that the overlap was rather small. In 23 searches E.M. produced 737 and MEDLARS 2,821 references; of these totals 246 references were duplicated. Of 226 relevant references from E.M. and 467 relevant references from MEDLARS (produced in the 15 searches where references were evaluated individually) 94 references were duplicated. The figures for the overlap in each of the searches can be read from Table 1, by subtracting the unique references from the total number of references.

It must be assumed that there are relevant references in the systems that were not retrieved and, in addition, there are relevant references outside the systems. Following the suggestions of McCarn[5] and Barber[6] this total of relevant references was estimated according to the formula:

$$RT = \frac{R/E.M. \times R/MEDLARS}{R/Both}$$

RT	total of relevant references
R/E.M.	relevant references retrieved from E.M.
R/MEDLARS	relevant references retrieved from MEDLARS
R/Both	relevant references retrieved from both systems.

This formula was applied to 13 searches where the relevance of the overlapping references was known and not equal to zero. Thereupon, with respect to this total, the recall of both systems was estimated (see Table 2).

The recall averaged 18 per cent in the E.M. retrievals (extreme values 2 per cent and 50 per cent), and 33 per cent in the MEDLARS retrievals (extreme values 6 per cent and 66 per cent).

3.4. Analysis of failures

An important aspect of the results is whether or not the delay between publication date and appearance of a citation in the printout influenced the differences in number of relevant citations. Therefore more detailed data were gathered on the searches with comparable time coverage and specified evaluations (12 searches). In 10 searches, with a time coverage from January 1969 or January 1970 through the third quarter of 1972, this was done by selecting all references of publication years 1970 and 1971. In 2 cases references of publication years 1971 and 1972 had to be selected as the time coverage was from January 1971 through the first quarter of 1973. After this selection was made relevance, overlap and unique relevant references were recorded. The results are given in Table 3.

It is evident that the overall effect of the selection was not spectacular, for in 11 out of the 12 searches the ratios of the unique relevant retrieved references were similar before and after selection. In one search only (No. 20 on 'Pentobarbital and heart output in dogs') the selection caused a modification in the result of the comparison. It was assumed that the findings, irrespective of publication dates, were generally representative for comparative evaluations.

More detailed data were gathered on the actual cause of the failures of either system to retrieve relevant citations provided by the other system. These data are added to the references selected with regard to time of publication (Table 3).

The failures of MEDLARS were distinguished as either journal failures (the journal was either not indexed or the article was not selected for indexing) or errors in indexing or search formulation. The failures of E.M. were distinguished similarly. However, it must be remarked that in E.M. failures attributed to indexing or searching could be caused by non-selection as, in the journal list of E.M., it is not stated whether or not a journal is selectively indexed.

In a total of 12 searches, MEDLARS failed to retrieve 71 references that were produced by E.M., whereas E.M. missed 160 references that were produced by MEDLARS. With MEDLARS 20 failures (28 per cent), and with E.M. 13 failures (8 per cent), were due to the journal not being indexed. Indexing or searching failures were therefore responsible for 72 per cent of the MEDLARS and 92 per cent of the E.M. failures.

TABLE 2: *Recall*

Search no.	Formula: $\frac{R/EM \times R/M}{R/Both}$	Total relevant references: RT	Recall E.M.	Recall MEDLARS
5	$\frac{5 \times 18}{1}$	90	5/ 90 = 6%	18/ 90 = 20%
7	$\frac{8 \times 16}{1}$	128	8/128 = 7%	16/128 = 13%
8	$\frac{29 \times 69}{19}$	105	29/105 = 28%	69/105 = 66%
9	$\frac{11 \times 28}{2}$	154	11/154 = 7%	28/154 = 18%
11	$\frac{17 \times 70}{8}$	149	17/149 = 11%	70/149 = 47%
12	$\frac{3 \times 16}{1}$	48	3/ 48 = 7%	16/ 48 = 33%
13	$\frac{5 \times 15}{3}$	25	5/ 25 = 20%	15/ 25 = 60%
15	$\frac{18 \times 28}{1}$	504	18/504 = 4%	28/504 = 6%
16	$\frac{89 \times 108}{48}$	200	89/200 = 45%	108/200 = 54%
17	$\frac{4 \times 58}{1}$	232	4/232 = 2%	58/232 = 25%
19	$\frac{8 \times 7}{2}$	28	8/ 28 = 29%	7/ 28 = 25%
20	$\frac{8 \times 9}{2}$	36	8/ 36 = 22%	9/ 36 = 25%
23	$\frac{12 \times 10}{5}$	24	12/ 24 = 50%	10/ 24 = 42%

TABLE 3: *Selected results*

Search		Data base	Time coverage	Retrieved refs.	Relevant refs.	Precision (%)	Unique refs.	Unique relevant refs.	Selected publ. years	Retrieved refs.	Relevant refs.	Precision (%)	Unique relevant refs.	Data base	Failures due to	
No.	Subject														j.	i/s.
6	Visual illusions and eye movements.	EM	Jan '71–June '73	14	3	21	13	3	'71+'72	11	2	18	2	M	1	1
		M	Jan '71–May '73	105	15	14	104	15		93	12	13	12	EM	1	11
7	Blood pressure dynamics of hypertensive patients after myocardial infarct.	EM	Jan '69–10/10 '72	21	8	38	19	7	'70+'71	14	3	21	3	M	2	1
		M	Jan '69–Oct '72	97	16	16	95	15		54	6	11	6	EM	1	5
8	Determination of alkaline phosphatase isoenzyme.	EM	Jan '69–30/10 '72	44	29	66	16	10	'70+'71	28	19	68	8	M	1	7
		M	Jan '69–Dec '72	209	69	33	181	50		114	33	29	22	EM	2	20
9	Esterases and cardiovascular physiology.	EM	Jan '71–June '73	20	11	55	14	9	'71+'72	18	9	50	7	M	0	7
		M	Jan '71–May '73	141	28	20	135	26		105	22	21	20	EM	0	20
11	Airborne infection.	EM	Jan '69–30/10 '72	52	17	33	31	9	'70+'71	36	9	25	5	M	3	2
		M	Jan '69–Dec '72	261	70	27	240	62		131	37	28	33	EM	3	30
12	Endocarditis lenta after tooth extraction.	EM	Jan '69–17/10 '72	3	3	100	2	2	'70+'71	3	3	100	2	M	0	2
		M	Jan '69–Dec '72	18	16	89	17	15		12	10	83	9	EM	1	8
13	Mucus analysis in cystic fibrosis.	EM	Jan '69–13/11 '72	11	5	45	8	2	'70+'71	7	3	43	2	M	1	1
		M	Jan '69–Nov '72	33	15	45	30	12		20	8	40	7	EM	0	7
15	Interaction between exogenic toxins and small intestine epithelium.	EM	Jan '69–7/11 '72	25	18	72	24	17	'70+'71	17	12	71	11	M	1	10
		M	Jan '69–Nov '72	34	28	82	33	27		19	15	79	14	EM	0	14
16	Nerve growth factor.	EM	Jan '69–12/12 '72	96	89	93	44	41	'70+'71	52	49	94	19	M	9	10
		M	Jan '70–March '73	118	108	92	66	60		68	62	91	32	EM	4	28
19	Behavior therapy of asthmatics.	EM	Jan '69–13/10 '72	8	8	100	6	6	'70+'71	6	6	100	4	M	0	4
		M	Jan '69–Dec '72	7	7	100	5	5		5	5	100	3	EM	0	3
20	Pentobarbital and heart output in dogs.	EM	Jan '69–17/10 '72	17	8	47	12	6	'70+'71	13	7	54	5	M	1	4
		M	Jan '69–Dec '72	21	9	43	16	7		11	2	18	0	EM	0	0
23	Tetracyclines in milk.	EM	Jan '69–13/11 '72	31	12	39	26	7	'70+'71	14	5	36	3	M	1	2
		M	Jan '69–Dec '72	28	10	36	23	5		13	4	31	2	EM	1	1

j. and i/s. stand for journal coverage and indexing or searching resp.

3.5 Comparison of search strategies

As stated in the introduction, attempts were made to find the most efficient search strategy for each system. It was often difficult to find equivalent formulations. To demonstrate this difficulty the search formulations of two requests are given: the search on 'Obesity in babies' (No. 3; 'easy' to formulate in MEDLARS and 'difficult' in E.M.) and the search on 'Respiratory quotient in birds and rats: catabolism after fasting' (No. 5; 'difficult' in MEDLARS and 'easy' in E.M.).

Example 1. 'Obesity in babies'.

E.M.: the formulation consisted of 6 profiles:
(1) R: obesity AND baby OR obesity AND newborn infant
(2) R: obesity
U: 21
(3) R: obesity
P: 7.5 OR 7.7
(4) R: baby OR newborn infant
P: 3.10.2
(5) R: infant
P: 3.10.2
(6) P: 3.10.2
U: 21

The significance of the elements is:

U: 21	newborn
P: 7.5	Pediatrics and pediatric surgery. Newborn infant and fetus.
P: 7.7	Pediatrics and pediatric surgery. Nutrition.
P: 3.10.2	Endocrinology. Lipid metabolism. Obesity.

MEDLARS formulation:

C: C13.088.39 (3 terms) = Obesity.
AND
M: infant, newborn OR M: infant

Example 2. 'Respiratory quotient in birds and rats: catabolism after fasting'.

E.M.: 1 profile:
R: catabolism AND fasting OR respiratory quotient.
U: 703 OR 733.
The significance is:
U: 703 birds
U: 733 rats.

MEDLARS formulation:

M: oxygen consumption
AND
M: animal feed OR M: animal nutrition OR M: diet OR M: dietary carbohydrates OR M: dietary fats OR M: fasting OR M: food deprivation OR

M: Nutritional requirements
AND

$$\left.\begin{array}{l}\text{C: B2.036/S: metabolism}\\ \quad\text{(10 terms)}\\ \quad=\text{Birds}\\ \quad\text{OR}\\ \text{M: Rats/S: metabolism}\end{array}\right\}\ \text{OR}\ \left\{\begin{array}{l}\text{C: B2.036}\\ \quad\text{(10 terms)}\\ \quad=\text{Birds}\\ \quad\text{OR}\\ \text{M: Rats}\end{array}\right.\quad \text{AND}\quad \begin{array}{l}\text{C: G1.068}\\ \quad\text{(18 terms)}\\ \quad=\text{Metabolism}\\ \\ \\ \end{array}$$

3.6. Extension

In those searches where the enquirer was able to include in the evaluation either the actual or the supposed number of 'missing' as well as 'new' references, the 'extension ratio' of the retrieval performance was also measured.

According to Miller[7] this measure is the ratio (E) of the number of retrieved relevant references *not* known to the user before the search (the 'new' relevant references) to the number, whether or not retrieved, known before (F) plus one, thus:

$$E=\frac{\text{number of 'new' relevant references}}{F+1.}$$

As mentioned before, in several evaluations incomplete data were obtained, and only 12 out of the total of 23 comparative searches yielded evaluations with data on 'missing' and 'new' references. Miller's extension ratio was applied to these 12 searches (Table 4). The average E-value of the E.M. retrievals appeared to be 1.9 (extremes 0.2 and 6), MEDLARS E-value averaged 2.8 (extremes 0 and 8), whereas the average F-value was 19 (extremes 0 and 99).

Although the reliability of the F-values was sometimes doubted because of evaluation inconsistencies, a positive interpretation was placed on this result, as an increase of a user's collection by 1.9- or 2.8-fold respectively within the search period must result in a considerable enlargement of his knowledge of the literature.

3.7. Serendipity

The 'serendipity' value of the two data bases could not be compared. The data which were received on the MEDLARS evaluation form are summarized in Table 5. Serendipity is defined as the ratio of the number of non-relevant but interesting references to the total number of non-relevant references. Non-relevant but interesting references are considered to be 'accidently' detected: they are important in another field of interest than the enquirer intended to cover. The serendipity of 21 searches averaged 16 per cent (extreme values 0 per cent and 100 per cent).

In this report whether or not relevant references were important was ignored, as it was considered that such a distinction is too subjective to be used in general comparative conclusions.

TABLE 4: *Extension ratio*

Search no.	E-value E.M.	E-value MEDLARS	F-value
1	0.5	2.9	14
2	0.3	0.3	29
4	2	8	0
6	0.6	2.6	4
9	3.7	9	2
10	0.4	0.2	4
13	0.2	1.7	5
14	0.5	1.9	99
16	0.7	0.9	55
18	1.4	0.6	12
21	6	0	0
23	6	5	1

TABLE 5: *Serendipity*

Search no.	Serendipity MEDLARS (%)
1	2
2	25
3	10
4	8
5	0
6	4
8	7
10	10
11	8
12	0
13	6
14	100
15	17
16	90
17	0
18	1
19	0
20	17
21	27
22	0
23	0

4. Discussion

The interpretation of the results has suggested some improvements in future comparative studies on the usefulness of the E.M. and MEDLARS systems. It would, for instance, be interesting to investigate the effects on recall and precision of search strategies constructed by several formulators. To determine these effects the evaluation of the various results should be performed by the same person. In order to compare systems in retrieval effectiveness, search-formulation for these systems has to be done by equally experienced formulators. Similarly, the consistency of the evaluator could be controlled by comparing an original evaluation with another evaluation of the same material made after an interval of time.

A study of the actual use and need of this kind of literature information service would also be of interest. This could be carried out by comparing lists of references in future publications with the references offered by the systems.

The results presented here and those of Smith,[2] Ashmole[3] and Wilkinson[4] may confirm the superiority of E.M. in drug-related searches. Although in their search on epilepsy Goode *et al.*[1] compared results of *manual* retrieval from E.M. and those of *automatic* retrieval from MEDLARS, they reported some interesting findings. They found, as in the present study, a small overlap between the retrievals, and a great number of citations produced by either system. In addition, as shown here, their analysis of the failures to retrieve references indicated that these failures were due to indexing and searching failures rather than to journals not being indexed, although the latter factor was responsible more frequently in MEDLARS than in E.M.

It is tempting to compare the extension ratio results reported here with those of Miller,[7] although it is not in fact permissible to do so because of the much smaller number of retrieval performances in this series (211 and 104 by Miller, 12 in this case). In these searches the average E-value for the average F-value is in agreement with the values reported by Miller; on the other hand the extremes of both E- and the corresponding F-values are divergent. Probably the contact between enquirer and formulator as well as evaluation instructions, both mentioned by Miller as factors affecting the E-value, may explain these divergent results.

Finally, it should be mentioned that after becoming familiar with both systems a forecast will often be possible as to whether a question is better suited for one or the other system. Although both systems for the most part cover the same literature, for a particular type of subject the retrieval procedures may be very different. In general E.M. excels when the success of a search depends mainly on the presence of specific terms. On the other hand it can be very difficult to do a comprehensive search with the actual retrieval program of this system, at least when the search subject does not coincide with one or more classes of the E.M. classification system. The great advantage of MEDLARS is the freedom to connect a practically unlimited number of search terms, and to include term hierarchies in the search formulation.

For a fair judgment of both systems, however, one has to wait and see what MEDLINE programs can do in comparison with on-line retrieval using E.M. It must be taken into account that the E.M. system is in a process of continuing improvement; at present the structuring of MALIMET is in progress.

It was found that the systems complement one another. In dealing with many questions on diverse topics, if a question is answered poorly by one system, it will be answered well by the other. In addition, if the same search is run on both these systems, the combined results provide a list of references as complete as possible.

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Information services for a multi-disciplinary unit

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ACCENT IS something delicate. It may change meaning. This is an important fact, which our profession has been particularly aware of; it cannot afford not to give heed to it. The phrase in figure 1 provides evidence. Accent can turn bits of information (and bytes of it) into pieces of information. It can turn, as Boulding[1] suggests, 'a bit into a wit'.

Time flies like an arrow

FIG. 1

In this context the accent in the above phrase is on 'time', whereby the word 'flies', not the word 'like' or 'time', has the role of a verb. The phrase thus helps to pinpoint the evasive and evolving problem we have to deal with and to give it its particular accent.

1. The problem

1.1. The nature of the problem

This communication deals with the organization and operations of an information service for a new, small group of users in charge of corporate development work. These users displayed a very wide spectrum of interests coupled with

- ○ the desire to maintain comprehensiveness
- ○ the need to be very project oriented

thus hoping for a capability of 'zooming' into any arising problem. Keywords in this description are as follows:

Corporate development. CD is a staff unit to the Corporate Management. It has to cater for the latter's interest in respect to growth. The scope of these interests is illustrated in figure 2. It emphasizes that this scope is the widest one in the organization and that interests can at the same time become very topical. The arrow points to new events and new problems in the environment, and like the arrow of time suggests a prospective attitude in a world full of surprises.

Comprehensiveness. Eugster[2] illustrates the directions of healthy growth with the aid of figure 3. It implies both expansion and diversification, and thus includes interests in *new* fields both from the points of view of markets and of technology. This makes the information job a difficult one. The information to be used may be irrespective of particular disciplines, but yet stem from any discipline. In other words the information will be multi-disciplinary—a keyword in the title

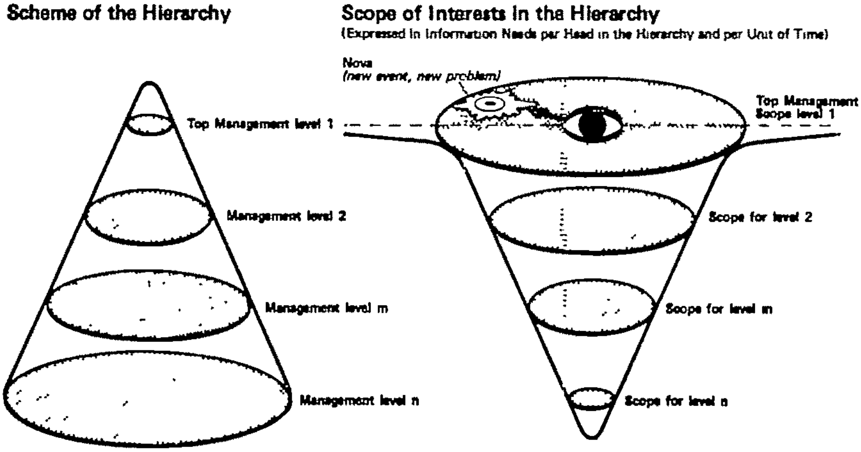


FIG. 2: *Scope of interest according to level in the organization hierarchy*

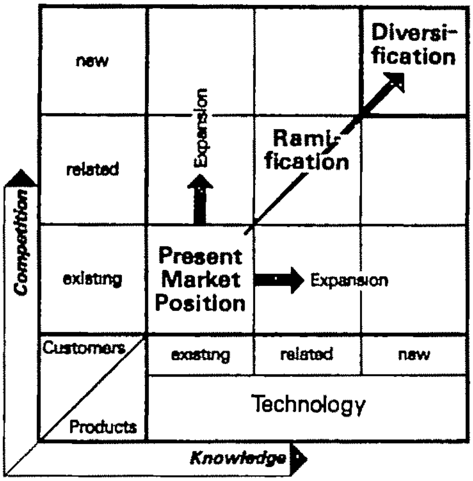


FIG. 3: *Directions of industrial growth*

and embracing the entire array of human knowledge, the physical sciences as well as the humanities.

Furthermore, the interest in what is *new*, carries one into the antinomy that one can never know today the problem requiring attention tomorrow. One thus has to anticipate and help to anticipate. As to technology, one can anticipate it, according to Drucker[3] 'by systematically looking for new knowledge. New major technological opportunities are prefigured in new intellectual attitudes and even in intellectual slogans. Not only do such slogans indicate new needs. They indicate new insights.'

A less encouraging view transpires from the words 'It is quite impossible to detect evolutionary potential at the time when it occurs. In evolution we can be wise only very long after the event'.[4] This is Boulding's observation when he looks for 'concepts which could give economics a dynamic and a sense of direction', as he says, 'indeed a *time's arrow*'.

With this antinomy in mind[5] the information job is to keep track of significant moves and forthcoming paradigms,[6] in other words to look for the seeds of change. It has to promote the reduction of the time gap in Boulding's observation between occurrences and lagging wisdom.

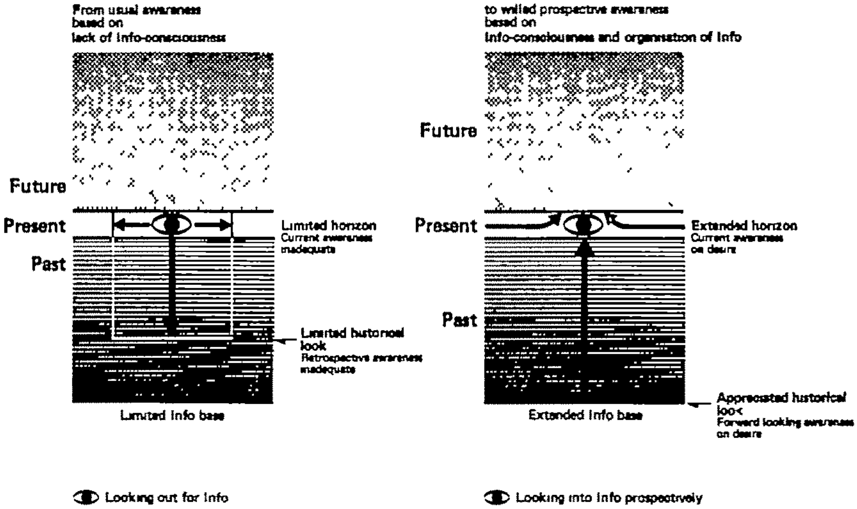


FIG. 4: *Feasible objective in knowledge society—extended prospective information awareness as intended*

New subjects of interest judged worthy to receive further attention are fixed in projects, including horizon studies first and their eventual follow-up. They represent those interests which become topical. They require the capability of 'zooming' into detailed information. A further keyword, *Zoomability*,[7] is found: this is a faculty of accessing any store of information, even if not regularly used, and presupposes a kind of linguistic capacity both for the paralanguage of classification and the jargon language of its subjects. It thus refers to speedy accessing of information stores and the corresponding ability of becoming quickly conversant with all types of information systems and people, each using their own classification languages and discipline jargons.

Thus, the keyword *interests* appears to stand for a very wide and comprehensive spectrum indeed, so that the information service should strive at an *extended information awareness*. Figure 4 illustrates this as a feasible objective in our 'knowledge society'. Here the arrow of time is not only flying, but time's three dimensions enter and the arrows represent the prospective look, and hint to the need for well-informed evaluations and decisions at a point in time.

There are, however, practical constraints in realizing the objective. There is the selectivity-comprehensiveness problem as to desires and needs which is, in fact, a paradox, consisting of the tension existing between the following:

- ○ the necessity to concentrate one's attention upon a selected number of variables instead of dispersing attention over a wide field of vision, that is comprehensively
- ○ the need for a comprehensive view as a background for strategic selection.[8]

This paradox needs particular consideration in the organizational set up for the sake of information relevance from the qualitative point of view and of manageability from the quantitative point of view.

Secondly, there is the time constraint. Just as one cannot postpone living until a remedy against one's illness is discovered, so in business the coerciveness of life is a most salient characteristic.[9] But not only this; business life has to do with others. 'In science the scientist has to do with nature, which does not change policy, so that his work here is governed by his best moments. In business, however, the opponents do change policy, so that work here is governed by the worker's worst moments.[10]

These constraints impose real, if not always readily understood, limits to the information and documentation job. To refer to a very simple, but recurring example: often the main library orders material at the 'NLL', and more than once it received after two weeks' delay the preprinted reply 'Item not yet received, please reapply in . . . (e.g. 6 or 8) weeks'. Now one to two months' waiting may imply that the interest in the subject will vanish and it certainly implies that the interest of the moment of receiving the item desired risks to be below the level one hoped for. The time constraint, even with such admirable organizations as the 'NLL', is very real.

Pragmatically one has to apply the so-called Mosaic Theory: the pieces of information presented as output resemble the diversified whole of a mosaic being relevant in varying degrees to the needs, and represent in a cohesive fashion what can be found up to the date of presentation. The theory is well-known between security people. Lord Diplock and his colleagues on the security commission[11] point out concerning a recent case:

> Under the influence of this (so and so) drug we consider that there would be a significant danger of his divulging, without any conscious intention of doing so, items of classified information which might be of value to a foreign intelligence service in *piecing together* from a number of different sources a complete picture from which conclusions dangerous to national security could be drawn.

A schematic representation of the concept of an information unit for meeting Corporate Development staff needs and using well-known notions is shown in figure 5.

The constraints imply that it will not be possible, however well one conceives the information unit, to avoid the situation of 'incomplete' information.

1.2. The setting

Within the prevailing local setting a classical approach using the commodity concept of information might have fitted. This concept stresses the *trade* role of the information service: one has to exploit the information supply market to meet the structured needs of one's usership. Figure 6 shows this role of middleman. This concept turns the information service's attention to the supply market. The service may then be overwhelmed by the 'information explosion' and too much information may be passed on and pushed on to the users' desks.

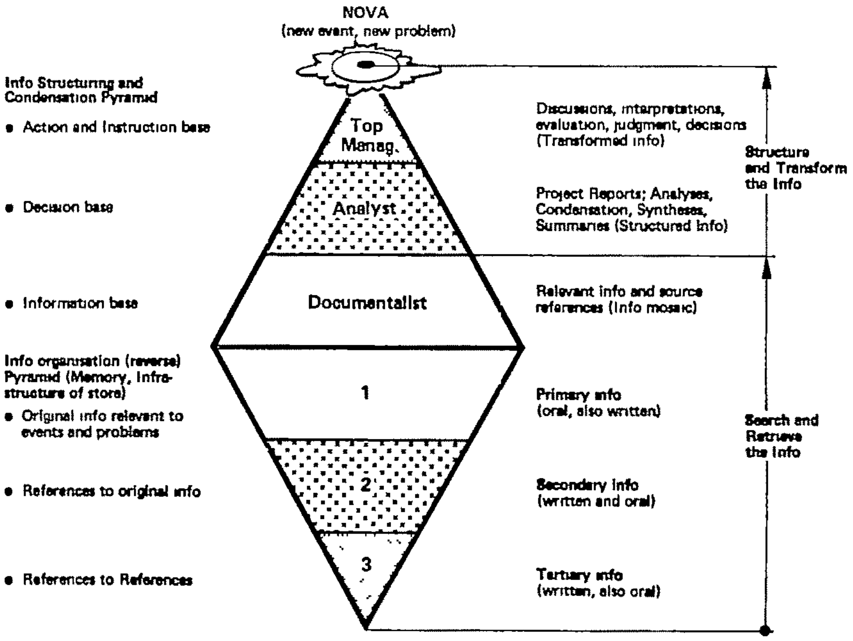

NOVA
(new event, new problem)
Info Structuring and Condensation Pyramid
• Action and Instruction base
• Decision base
• Information base
Info organisation (reverse) Pyramid (Memory, Infrastructure of store)
• Original info relevant to events and problems
• References to original info
• References to References
Top Manag.
Analyst
Documentalist
1
2
3
Discussions, interpretations, evaluation, judgment, decisions (Transformed info)
Project Reports; Analyses, Condensation, Syntheses, Summaries (Structured Info)
Relevant info and source references (Info mosaic)
Primary info (oral, also written)
Secondary info (written and oral)
Tertiary info (written, also oral)
Structure and Transform the Info
Search and Retrieve the Info

FIG. 5: *Concept of unit—information pyramids for corporate development work*

As to the keyword *information explosion*, there seems to be some discussion as to whether there was an explosion[12]

- O because of greater spread of knowledge through better media, or
- O because of growth of knowledge *per se*, or both, or no explosion at all!

However this may be, the push effect is certainly a phenomenon to be reckoned with.

Pragmatically one has to apply Bradford's law of scattering in the sense of using a small number of core sources. As to media, for instance, one can restrict the current input to, say, a hundred newspapers and periodicals partly as a constant, partly as a variable set subject to improvements and adaptation to evolving needs. But, in view of the wide spectrum of interests, the basic idea behind—even before he named it so—Garfields' law of concentration[13] was also applied. Again in the case of media, it appeared possible to rely on over

2,000 periodicals covering many disciplines, for which the company has standing subscriptions. Thus a worldwide and multi-disciplinary coverage was given.

With this solution the problem of limiting the input quantity seems to be feasible within the framework of the commodity concept. The quality aspect, however, risks being neglected, since relevance is not sufficiently secured.

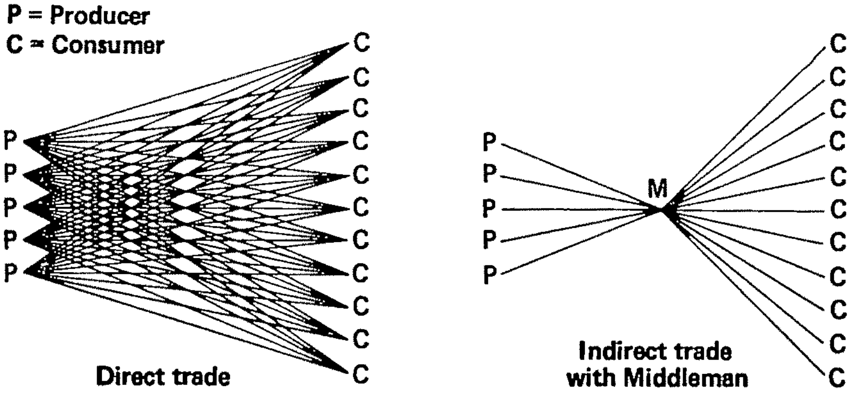


FIG. 6: *Trade role of service*

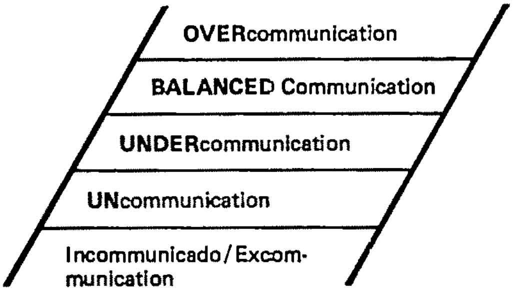


FIG. 7: *Communications ladder*

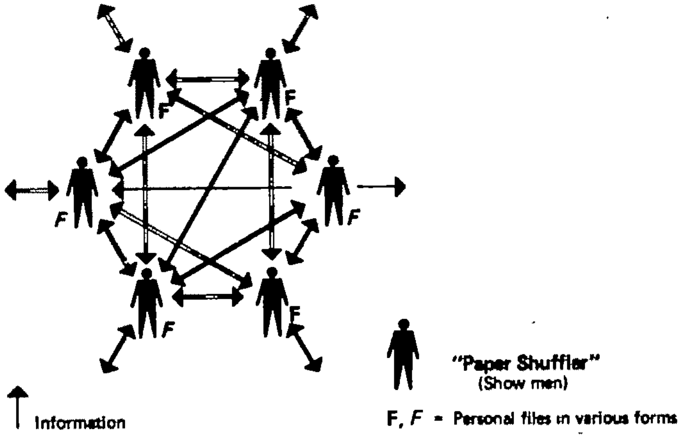
Looking at the opposite end the information service appears to be subject to a pull effect, governed by the needs of the users, but also by their capacity to digest the information, even if the information is reduced and condensed to resemble convenience food, as digests do. This capacity can be the weakest link in the push-pull chain, and should not be overstrained.[14] There is a big scatter in an individual's capacity here; ascertaining individual 'appetites' revealed to be essential.

The weakness of this classical commodity approach is in its accent on the 'one way only' idea: the information is considered to travel through the chain from pushing supply to pulling demand to meet needs according to a given needs structure.

2. The information job

2.1. The approach

Roles other than the trade role are accented when applying the communications approach. In considering communications several stages on a ladder can be considered, as figure 7 shows. Usually one finds a mixture of over- and under-communication in practical situations.[15] Characteristics of these are shown in figures 8 and 9.

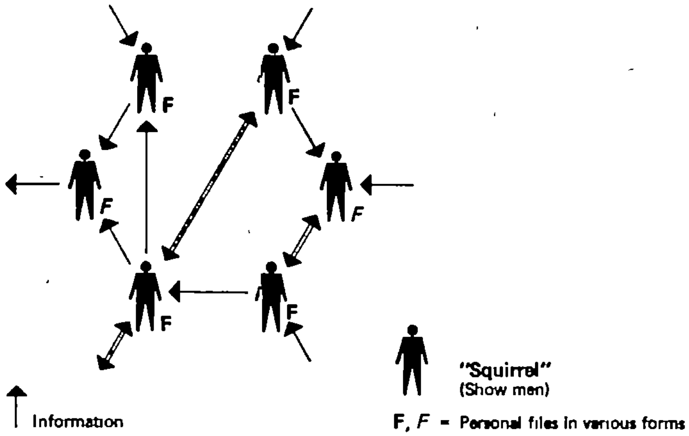


Characteristics

- **Too many communication channels (N)**
  - (N) tends towards maximum of n.(n – 1) for practical values of n.(n = number of members in group)
  - communication informal and impersonal or seemingly personal; routine channels lacking
  - communication by all means
  - personal span of communication is stretched
- **Weak personal relation to Informaton**
  - published info, easily accessible in press etc.
  - trivial info
  - disposable info: short time from relevance to redundancy
  - tendency towards voluminous individual filing
  - big need for clerical assistance, tendency to misuse secretaries to scatter info
- **Information consciousness ("knowledge is power")***[17]
  - tendency towards inflation of info awareness
  - "up to you to turn this knowledge into power"
  - small propensity to accumulate and consolidate info as company property: Info drain

FIG. 8: *Overcommunication—Information scattering and drain*

The in-between situation of balanced communications was aimed at, considering that the CD staff consists of a small group of people. The keyword *Group of users* thus refers to a primary group for which good communications are important and realizable. Figure 10 represents this objective.

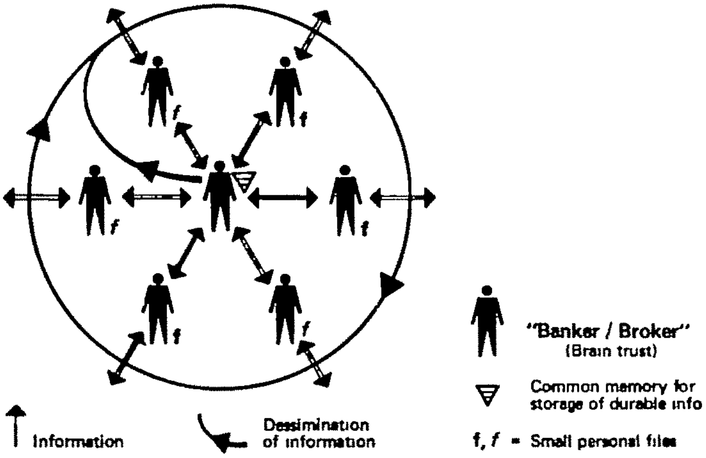


Characteristics

- Too few communication channels (N)
  - (N) far below its maximum of n. (n – 1) for n >4, (n = number of members in group)
  - communication largely informal; routine channels lacking
  - communication often haphazard
  - communications limited to personal span
- Intensive personal relation to information
  - self-created info
  - rare info
  - info which is at a certain point in time vital resp. confidential
  - durable info: long time from relevance to redundancy
  - tendency towards substantial individual filing to hoard the info
  - big demand for "secret"-arial assistance
- Information consciousness ("knowledge is power")
  - tendency towards depreciation of info awareness
  - "my knowledge is my power"
  - big propensity to let company property go astray without culprit: info drain

FIG. 9: *Undercommunication—Information hoarding and drain*

The other roles now accented are the Broker's role for dealing with communicable information, and the Banker's role for dealing with information not to be communicated, as well as the in-between role for dealing with 'restricted' information.16


f
f
f
f
f
f
"Banker / Broker"
(Brain trust)
Common memory for storage of durable info
f, f = Small personal files
Information
Dessimination of information

Characteristics

- Chosen number of formal communication channels complements reduced number of informal channels
  - – balance of formal and informal communication
  - – balance of intended and avoided communications
  - – communication of current info from present can easily be complemented by relevant info from the past
  - – personal span of communications complemented by routine channels

  Good "Com-mix"

- Balanced personal relation to information
  - – individually, for confidential info to be banked
  - – groupwise, for common info, to be broked
  - – extended prospective awareness as intended
  - – awareness based on both current and retrospective info
  - – random and instant access to durable info: revival of old info from organized memory
  - – instant dissemination of disposable info (Flash-info, Newsletter-info)
  - – info parity (common and simultaneous) according to stratification through confidentiality grading (C_0, C_1, C_2, C_3, ...)
  - – tendency towards small complementary personal filing for new problems during a short period only
  - – reduced need for individual secretarial and clerical assistance, recognized need for professional info handling and corresponding division of labour to bank and broke the info

- Information consciousness ("knowledge is power")
  - – tendency towards willed info awareness and towards consciousness of info value and info parity
  - – "our knowledge is our power"
  - – balanced company relation to information resulting in less losses of info and producing a better continuity link: info gain

FIG. 10: *Balanced communication—Information 'parity' and gain*

The approach builds on current communications, dialogues, etc. and does, in fact, recognize that the so-called *users indeed are identical with suppliers,* the more so when they have common group concern. Also, instead of taking a needs structure, however well analysed, as a starting point, this approach makes the problem of the needs structure dynamic in the shape of a *needs structuring process.* This contributes to the required quality alignment and quantity assessment. As a corollary it favours browsing and serendipity, the facility for making happy and unexpected discoveries by accident.

With the aid of this approach the information service could hope to balance wide information access with quantitatively very limited and qualitatively very mission-relevant output.

2.2. The solution

The result is a communications mixture balancing a worldwide Management Information System for current awareness on developments of business and its environment, as a continuing function, and an Individual Service Information System supported by a retrieval system, used in an *ad hoc* way.

The Management Information System (MIS) has the following standard output:

- ○ A world Business Newsletter System
- ○ an Awareness System giving reference to items selected from input into the Retrieval System, the so-called Memory
- ○ an Accessions List System concerning document titles entering a collection unit in charge of gathering non-purchasable published information material.

The publications of the Awareness System and the Accessions List System appear very regularly, the first weekly. Their dissemination time is early on Monday morning to help start the workweek. The Newsletter appears less regularly, about ten to fourteen times a year, and has the characteristics of a news review or round up.

Each of the above publications has a very simple device allowing one to apply for more information on any of their contents. When reading one has only to tick the lines arousing further interest, to tear off the pre-addressed sheet and to put it in the out-tray. It is crucial indeed to offer an instrument of convenient feedback, first as a chalm in the chain of a speedy back-up service at an almost clerical level, second as a communication at a higher level. The feedback can be used to set up dialogues with the users to understand their interests. There is thus a built-in procedure providing formal feedback and suggesting informal feedback which gives the keen information officer a lead and serves as a feed-forward.[18]

The Individual Service Information System (ISIS) deals with special requests. It uses a specifically-designed memory: a storage and retrieval system with an inverted coordinate index employing about 500 key words. Such a system is particularly fast in replying to the question of whether there is any information at all on a subject in the memory. If the answer is yes, the system is also quick in making the likely pertinent material available for checking its real relevance to the user's demand, and fosters browsing. ISIS further accesses many other stores of information within and outside the company. Its output has, understandably, various formats.

As to input, ordering of material is normally handled by the main library using its standard procedures, or, in special cases, dealt with through much quicker though sometimes a little more expensive *ad hoc* procedures.

For the input to MIS a collaborative scanning scheme with reading assignments for duty scanners and even replacement scanners of media has been put in operation. The scanners use Scanners' Instructions Slips and attach them to their assigned media after cover-to-cover reading. Their instructions are carried out by clerical staff. They include on the one hand instructions for input to the MIS, on the other hand instructions to send a particular piece of information to someone who is interested. The latter provides a type of SDI system, not as a by-product but as an essential current service in the communications mix.

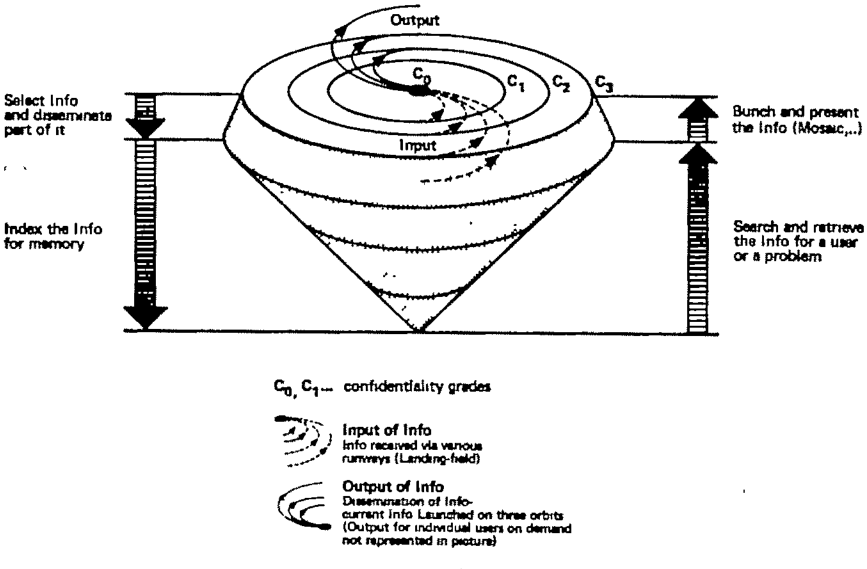

Output
C_0
C_1
C_2
C_3
Input
Select Info and disseminate part of it
Index the Info for memory
Bunch and present the Info (Mosaic,..)
Search and retrieve the Info for a user or a problem
C_0, C_1... confidentiality grades
Input of Info
Info received via various runways (Landing-field)
Output of Info
Dissemination of Info-current Info Launched on three orbits (Output for individual users on demand not represented in picture)

FIG. 11: *Scheme of the info unit*

In order to convey users' input to the memory, forms similar to the Scanner's Instructions Slips were introduced. Every user can have a pad of these forms on his desk if he desires. The information service's input is thus user-related. This helps to overcome the selectivity-comprehensiveness paradox. First, each member of the group experiences it. Second, since the selections made by the group's members can be seen as hints they do provide a sort of feed forward to the information service. Furthermore the whole of the selections corresponds to an integration of individual outlooks which reduces bias, and if in total the selection is still more or less biased, it is biased towards the interests and vision of the usership. Finally the users maintain contact with sources. In the case of media this is important, since it capitalizes on a desire which many users express to see some media themselves, in order not to lose the feel for the development of the medium and its messages, including its messengers. The first step in setting up the service was not the building up of a reliable memory of a minimum size to have sufficient substance because of the belief in a minimal critical mass, but the launching of the World Business Newsletter, albeit in what we now would qualify as a simple format. This offered an early take-off, and an immediate information parity to the readership, instituted the feedback and feedforward mechanisms, and provided an intensive learning opportunity to the information service, especially to its editor.

MIS and ISIS now operate as tandem systems.

A scheme of the information service expressing the communications approach and its dynamics is shown in figure 11, by taking the lower part of figure 5 in perspective.

3. Final observations

3.1. Experiences

The realization of a new information parity structure was welcomed. The simultaneous communication of the same information to members of the CD group and to groups of managers provides and maintains a body of timely common knowledge that they cannot afford to ignore. Thus the awareness level is both extended and raised. The system was imitated in many places throughout the company, though not always as a full-fledged system.

As to the future of the service, it appears to be very important that the users act as a group, even if frequent changes in the group's composition occur. Such changes may, however, do no good to the collaborative schemes and require special action in order that newcomers may participate.

Since the best is the enemy of the good, the development of the systems once they have a certain momentum presents a special problem of balancing routine procedures with changes in them, and the superposition of new procedures.

The service character of the information systems can be upset if the information people deviate from the objective of balanced communications and choose over- or under-communication. A set of rules is necessary to prevent this: for example, information grading rules, control of distribution keys, circulation and ordering procedures. However, rules alone are not sufficient to keep bad role players in check.[19] The information man has to be a good sport (and to be in constant training for that).

Considering this the development towards an all-departments information system is not recommended. Such development entails the risk of unbalanced communications. Preferably, the development of a net with qualified information services as nodes, even if they are of varying quality and size, is to be pursued. The imitation of MIS throughout the company almost spontaneously created such a net. It is operating usefully and facilitates information access and exchange internally.

3.2. Conclusions

Generally speaking the development of a situation with a lack of information consciousness into a situation where communication consciousness allows the organization of a well-running and accepted information service has occurred. The development was accompanied by a move away from supply-push towards demand-pull. The built-in feedback opportunities stimulated adaptation of information to needs, and needs to the currently improving information opportunities.

The figures 8, 9 and 10 on communication have been used to introduce members of the group to the service and their participation in the collaborative scheme.

The service contributes its building bricks—in the shape of mosaics one might say—for healthy growth and helps to give corporate development a 'time's arrow'.

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The British Library

Editorial

Introduction

WITH THE transfer of the Office of Scientific and Technical Information from the Department of Education and Science to the British Library in April, the major recommendations of the Dainton Committee (*Report of the National Libraries Committee, HMSO, 1969, Cmnd 4028*) on the structure of the Library have now been implemented and this seems an appropriate moment to summarise the present structure and to bring together information which has been made available during the last three years.

British Library Board

The enabling legislation, the *British Library Act*, 1972, provided for the setting up of the governing body, the British Library Board, which came into existence in April 1973 and consists of a part-time Chairman, a full-time Deputy Chairman (who is also the Chief Executive), three full-time members, a Secretary, and nine part-time members as follows:

Chairman: The Rt. Hon. Viscount Eccles, KCVO
Deputy Chairman and Chief Executive: Dr. H. T. Hookway
Secretary: Mr. E. Martindale
Director General, Reference Division: Mr. D. Richnell
Director General, Lending Division: Dr. D. J. Urquhart, CBE
Director General, Bibliographical Services Division: Not yet appointed
Part-time members:
- Lt. Col. the Rt. Hon. The Lord Adeane, GCB GCVO
- Dr. J. W. Barrett CBE, Director Monsanto Chemical Co.
- Mr. John Brown, CBE, Oxford University Press
- Mrs. A. Munro, CBE, St. Paul's School for Girls
- Dr. A. N. L. Munby, King's College, Cambridge
- Dr. A. E. Ritchie, Carnegie Trust for the Universities of Scotland
- Prof. G. Williams, University College of Swansea
- M. J. S. Watson, University of St. Andrews.

The Library is an independent corporate body funded by income from its own services, independent sources, and an annual grant-in-aid from the Department of Education and Science. The total staff of the Library is about 1700 and the current budget is about £8.5 million.

Structure and main locations

British Library Board. Chief Executive, Dr. H. T. Hookway
Store St., London WC1E 7DG. Tel: 01-636 0755
Press Officer: Mr. D. Parsons
Reference Division (Previously the British Museum Library and the National Reference Library of Science and Invention): Director General, Mr. D. Richnell
Department of Printed Books.
Great Russell St., London WC1B 3DG. Tel: 01-636 1544
Department of Manuscripts.
Great Russell St., London WC1B 3DG. Tel: 01-636 1544
Department of Oriental Manuscripts and Printed Books.
Great Russell St., London WC1B 3DG. Tel: 01-636 1544
Science Reference Library. Director: Mr. M. Hill
Holborn Branch, 25 Southampton Buildings, Chancery Lane, London WC2A 1AW. Tel: 01-405 8721. Bayswater Branch, 10 Porchester Gardens, Queensway, London W2 4DE. Tel: 01-727 3022
Library Association Library. Librarian: Mr. L. J. Taylor
7 Ridgmount St., London WC1E 7AE
Lending Division (Previously National Central Library and National Lending Library for Science and Technology):
Director General, Dr. D. J. Urquhart
Deputy Director General, Mr. M. B. Line
Boston Spa, Wetherby, Yorks LS23 7BQ. Tel: 0937 843434
Bibliographical Services Division. The formation of this Division has not yet been completed but will include:
British National Bibliography. Editor: A. J. Wells, OBE
7–9 Rathbone St., London W1P 2AL
Research and Development Department. Head: Mr. J. C. Gray
5th Floor, Elizabeth House, York Rd., London SE1 7PH. Tel: 01-928 9222
Systems Development Branch. Head: Mr. R. E. Coward
Africa House, Kingsway, London WC2B 6DB. Tel: 01-242 0545
Administration Branch. Secretary, Mr. E. Martindale
49–53 Parliament St., London SW1A 2NH. Tel: 01-930 4300

Advisory Councils

The British Library Act allows for the setting up of one or more Advisory Councils consisting of members nominated by the Secretary of State for Education and Science. These have not yet been formed but a more informal committee has been established to advise specifically on the lending services. The composition of this is as follows:

BLL Consultative Committee for Lending Services

Mr. W. Ashworth, The Polytechnic of Central London
Mr. B. C. Bloomfield, School of Oriental and African Studies

Mr. W. H. Brown, Department of Printed Books, National Library of Scotland
Mr. W. R. H. Carson, The Southern Education and Library Board, Armagh
Mr. D. A. Clarke, British Library of Political and Economic Science
Mr. L. J. Feiweles, County Library Headquarters, Wakefield
Mr. K. G. E. Harris, Newcastle upon Tyne Polytechnic
Mr. P. S. Harris, Warren Spring Laboratory, Stevenage
Mr. P. O'N Hoey, J. Lyons and Company Ltd., London
Miss Joan Houlgate, Reference Librarian, British Broadcasting Corporation
Dr. P. A. Larkin, The Brynmor Jones Library, University of Hull
Mr. D. H. Merry, Department of Printed Books, Bodleian Library
Mr. Wm. R. Maidment, London Borough of Camden, St. Pancras Library
Miss J. M. Plaister, London and South Eastern Library Region
Mr. P. D. Pocklington, Chester Public Library
Mr. M. J. Rowlands, British Museum (Natural History)
Mr. R. Sewell, British Steel Corporation, Rotherham
Dr. R. S. Smith, University of Nottingham
Professor B. C. Vickery, School of Library Archive and Information Studies, University College London
Mr. P. Wade, The Royal Society of Medicine

Publications

Those wishing to keep in touch with changes and developments in the British Library may find the following useful:

Reference Division

Science Reference Library News. Irregular. London, Science Reference Library, 25 Southampton Buildings, Chancery Lane, London WC2A 1AW. Gratis.

Lending Division

BLL Review, vol. 1, 1973 and onwards. Quarterly, London, HMSO, £2.18 p.a.

Research and Development Dept.

British Library R & D Newsletter (previously OSTI Newsletter), 1974 and onwards. British Library R & D Dept, Elizabeth House, York Rd., London SE1 7PH. Gratis.

Bibliography

The following is an annotated list of the major papers relating to the formation of the British Library published since 1971.

(a) *Official Publications*

THE BRITISH LIBRARY. London: HMSO, January 1971, 7p. (Cmnd. 4572).

The UK Government has decided to combine the British Museum Library (including NRLSI), the National Central Library and the National Lending Library for Science and Technology and the British National Bibliography into a single organization, the British Library. The NRLSI will be renamed the Science Reference Library. The decision accords with the National Libraries Committee's recommendation. The British Library's objectives will be to provide the best possible central services including: (1) preserving and making available for reference at least one copy of every book and periodical of domestic origin and as many overseas publications as possible; (2) providing an efficient central lending and photocopy service; (3) providing central cataloguing and other bibliographic services. Rehousing of the BM and the NRLSI is a desperate need and the site will be on seven acres between New Oxford Street and Great Russell Street, adjacent to the BM. The following matters concerning the British Library are considered: scope, constitution, organizing committee, advisory councils, legal deposit, transitional arrangements, staff, finance, costs. Stages of development are: (1) establishment of the organizing committee; (2) passage of legislation to set up the organization; (3) formal establishment. Preliminary work on the new Bloomsbury buildings (which will cost £36 million and take thirteen years to complete) will go ahead without delay. Similarly, plans for concentrating lending facilities, including those of the NCL at Boston Spa will go ahead under the organizing committee.

THE BRITISH LIBRARY.
Hansard, 315, 64, 2 March 1971, col. 1276–86, 1290–1332.
GREAT BRITAIN. Parliament. House of Lords.

A Bill intituled an Act to establish a national library for the United Kingdom under the control and management of a new Board and incorporating the library of the British Museum: and for connected purposes. London: HMSO, 1972.

GREAT BRITAIN. Laws, statutes, etc.

British Library Act 1972: chapter 54: an act to establish a national library for the United Kingdom under the control and management of a new board and incorporating the library of the British Museum; and for connected purposes.

GREAT BRITAIN. Parliament, House of Lords
British Library Bill: second reading.
Hansard, 329, 57, 28 March 1972, p. 953–1013.

LINE, M. B. *and others*
The scope for automatic data processing in the British Library: report of a study into the feasibility of applying ADP to the operations and services of the British Library. Part 1: Report and Annexes A–B; Part 2: Annexes C–H. London: HMSO, 1972.

Report of a study sponsored by DES after the recommendations of the Dainton Committee. Considers the desirability, feasibility and cost of ADP in relation to all the major activities of institutions constituting the British Library; comparisons are made with present operations. Chapters cover: the British Museum Library and the Science Reference Library; bibliographic services and records; lending services; special categories of materials; other ADP applications relevant to the British Library; conclusions and implementation of recommendations and implications for other libraries. The overall conclusion is that the extension of the use of ADP techniques offers the most effective and economic means of developing the British Library services in the areas of: British Museum Library/Science Reference Library/Bibliographic Services Unit cataloguing; Bibliographic services; British Library serials catalogues and records; Lending unit finding lists. Implementation proposals are grouped into three phases, with the first two occupying three years.

(b) *Other papers and reports*

FROM THE BRITISH MUSEUM TO THE BRITISH LIBRARY: the emergence of a promise of action at last, with all the details to fill in.
Times Literary Supplement, 15 January 1971, pp. 53–4.

The British Library is an outline sketch rather than a blue print. The name, too reminiscent of British Railways, does not indicate that there will be two libraries—for reference in Bloomsbury and for lending at Boston Spa. The retention of the name British Museum Library omits the BM's all important reference function. There will be separate Directorates for the British Museum Library, Science Reference Library, Bibliographic Services and Lending Services; two would be enough. The Directorates' relationship to the Board is essential. The Organizing Committee's burden between Parliamentary approval and the passing of legislation is well-nigh insupportable. The White Paper is welcome as a broad vision.

A SCANDAL AMELIORATED.
Nature, **229**, 22 January 1971, p. 217–8.

Comment on the Goverment's response to the Dainton Report's recommendations on the establishment of the British Library.

RICHNELL, D. T.
Comment: the British Library.
Library Association Record, **73**, 2, February 1971, p. 38.

The White Paper provides the framework by which complex problems can be solved. Approval is already general for the decisions to combine the BM Library, the NCL and NLLST, to include the BNB and exclude the Science Museum Library and other 'national' libraries. The decision to house the National Reference Library's two units on a single site is correct. Less than wholehearted approval can be given to the transfer of the NCL's interlending operations to Boston Spa. The relationship of the Heads of Directorate to the Board remains unmentioned. Success or failure depends on personnell quality and the financial support given.

COMMENTARY.
Times Literary Supplement, (3601) 5 March 1971, p. 268.

Summarizes a House of Lords debate, 2 March 1971, on the recent White Paper. Lord Eccles filled in many missing details. There will be two new buildings on the Bloomsbury site, one for the Science Reference Library to be opened in 1978, the other three or more years later, for the British Museum Library itself. There will be communication by tunnel with the Kings Library. Lord Eccles found Dainton's National Libraries Authority 'very suitable for a large department store but not for an academic institution'. Until his Board is set up, he himself will probably preside over the interim Organizing Committee. Lord Eccles has made the scheme very much his own. It is more likely to be energetically put into effect if he is allowed to do this.

THE BRITISH LIBRARY: House of Lords asked to 'take note' of White Paper.
Bookseller, (3403) 13 March 1971, pp. 1528, 1530, 1532.

A report on the House of Lords debate, 2 March 1971. Summarizes speeches by Lord Eccles, Baroness Lee, the Earl of Cranbrook and Lord Ironside.

PARRY, V. T. H.
The British Library: a review of the White Paper.
Bulletin of the Circle of State Librarians, **19**, 2 May 1971, p. 21–4.

THE BRITISH LIBRARY: a national cataloguing service at last?
Catalogue and Index, **23**, Autumn 1971, pp. i, 12.

A great danger is that the British Library will be regarded by some as nothing more than a Greater British Museum Library. It is probably true that crucial decisions on the future of the national cataloguing service (if there is to be one) will be taken shortly. There must be an efficient current national bibliography; efficient union catalogues; the national library must have a worthy catalogue; and there must be a computer-based service useful to all the country's medium and large libraries. Above all, there must be a national cataloguing policy.

OWENS, W. H.
The world's finest library.
Australian Library Journal, 20, 8, September 1971, pp. 31–3.

The new British Library, to be built at a cost of £36 million, will offer unrivalled reference, lending and photocopying services. Among its resources will be the British Museum's 7 million volume library.

BROWN, Ivor.
Indian Librarian, 26, 3, December 1971, p. 140–42.

Outlines the scheme for the new British Library and briefly describes the British Museum Library. It is hoped that the first part of the British Library's new buildings will be ready in 1978. The project should take thirteen years to complete and the cost will be £36 million.

HUMPHREYS, K. W.
The British Library.
Journal of Librarianship, 4, 1, January 1972, p. 1–13.

Describes the attempts made in recent years to determine the essential functions of a national library. Considers those functions in relation to the Dainton Committee's recommendations and the proposals in the White Paper on the British Library. The White Paper is not encouraging from the librarian's point of view. It is not clear how the British Library's Board can take cognisance of the interaction between national and regional as well as local library systems. Maurice Line's National Libraries ADP study will guide the Board in making far-reaching decisions. It could be proposed that regional library bureaux be abolished. A machine-readable form of the British Museum catalogue could be used to convert other libraries' catalogues and a machine-readable union catalogue of periodicals could be used as the basis for similar catalogues in libraries.

ASLIB SOCIAL SCIENCES GROUP CONFERENCE, Bath University, 4–5 March 1972.
The British Library and the Social Sciences.
Aslib Proceedings, 24, 8, August 1972, p. 444–82.

Seven papers presented including: M. B. Line, Interlibrary lending in the social sciences: a note; G. H. Spinney, The British Museum Library and the social sciences: reference services; D. A. Clarke, The British Library of Political and Economic Science: reference services; K. W. Humphreys, Other national resources in the social sciences; N. Roberts, Desiderata for national bibliographical services; Summary and conclusions.

THOMPSON, Helen Cargill
The British Library: bibliographical prospects and expectations; Library Association: Cataloguing and Indexing Group Seminar, Edinburgh, 24–27 March 1972.
SLA News, 109, May–June 1972, p. 75–77, 79.

The description of the seminar.

GORMAN, Michael
The British Library: a report on the Annual Seminar of the Cataloguing and Indexing Group.
Catalogue and Index, 25, Spring 1972, p. 4–5.

The Seminar was held at Edinburgh University, March 1972. Its subject was the British Library: bibliographical prospects and expectations. The following papers are summarized: A. H. Chaplin on the background to present activities: A. L. van Wesemael on the recording of current British monographs, which included a comparison between British and Dutch practice: K. P. Jones on the recording of non-monographic materials: A. Trebble on non-book media; R. Astbury on antiquarian bibliographic material; H. Heaney on currently imported materials; K. Davison on data processing and the British Library's bibliographic services; British Library's place in international bibliography.

LINE, M. B.
Towards a better national lending system: planning the British Library's lending services.
NCL Newsletter, 12, April 1972, p. 4–5.

Planning the integration of the NLL and the NCL.

KASBOHM, Adelheid
Das Projekt British Library. [The British Library project.]
Zentralblatt Bibliothekswesen, 86, 7, July 1972, p. 391–405.

An assessment of the British Library proposals, based on official publications, especially the White Paper and on comment and discussion in Parliament and the press. Examines the structure and organization of the National Lending Library for Science and Technology. The project is seen as embodying not so much the reorganization of a library as the creation of a national library network, and the outcome will be of considerable importance beyond the confines of Great Britain.

LINE, M. B.
The developing national library network in Great Britain.
Library Resources and Technical Services, 16, 1, Winter 1972, p. 61–73.

Revised text of material presented to the American Library Association Annual Conference, Dallas, June 1971. Four factors favour national co-operation: (1) Great Britain is small in area; (2) a large number of libraries; (3) lack of financial support; (4) most libraries are already supported by public funds. It has been recommended that the proposed British Library should provide 80–90 per cent services in the social sciences and humanities. The author suggests a simple co-operative acquisition policy with such libraries as the Victoria and Albert Museum and the British Library of Political and Economic Science. Further questions are raised concerning the coverage of the central collection: the role, coverage, construction and accessibility of a union catalogue; the future of BNB and the MARC Project; the coverage of non-book materials; the national co-ordination of bibliographic services not covered by the units of the British Library; and the role of technological aids.

HORN, K. A. R.
From BM to BL.
Australian Academic and Research Libraries, 3, 3, September 1972, p. 129–42.

An account of the proposals for the new British Library based largely on the White Paper.

DP STUDY FOR NATIONAL LIBRARY.
Computer Weekly, 307, 21 September 1972, pp. 1, 3.

A detailed study of systems and data processing needs for the British Library has been authorized.

LINE, M. B.
The British Library and the public library service in the next few years: a personal view.
Proceedings, papers and summaries of discussions at the Public Libraries Conference held at Brighton, 25th September to 28th September 1972. London: Library Association, 1972.

Considers the role of public libraries in the light of changes in higher education, local government's information needs, the demand for sophisticated information services and local government reorganization. The British Library's development is outlined against this background. BL's reference services will not have much direct impact on public libraries. BL's bibliographic services will be more important for public libraries in such areas as greater demand for MARC records, possible machine-readable retrospective conversion of the British Museum Library's catalogue and the undertaking of computer processing for individual libraries. The use of Whitaker's computer tapes with PRECIS indexing terms might lessen the need for local cataloguing. BL's lending services will make most impact on public libraries. A central lending stock containing all worthwhile current English language monographs will be supplemented for heavy demand purposes by numerical catalogues of other library locations based on ISBN. With BL acquiring all worthwhile serials in all languages and subjects, the number of serial requests that cannot be met directly will be very small and it is doubtful whether the *British Union Catalogue of Periodicals* need be maintained in its present form. The regional interloan system will have a diminishing role in the next ten years. BL's hospitality to discards will mean that public libraries can reconsider their acquisition/disposal policies against the BL's services. Conclusion: there will be increasing standardization within and between local authorities and the UK's library system will become more of a whole, due partly to the creation of a true apex. The BL will be able to give real leadership in research, expertise and computer processing.

THOMPSON, James.
The British Library is taking shape.
Times Higher Educational Supplement, 52, 13 October 1972, p. 8.

The Science Reference Library should be ready by 1979 and the humanities block by 1984. Humanities materials should be available for loan in summer 1973 from Boston Spa. Union catalogues and books will be moved there from the National Central Library but only one-third of the staff is willing to transfer. Bibliographical services, centred in London, should provide an efficient national cataloguing service. Integrating reference, lending and bibliography requires a head who is a professional librarian, not a refugee from politics or scholarship. Early next year the Organising Committee will be replaced by the British Library Board.

BRITISH LIBRARY ADP FEASIBILITY STUDY.
Aslib Proceedings, 24, 11, November 1972, p. 614–6.

A summary of the report by Maurice Line published in 1972.

LINE, M. B.
Automation and the British Library.
Library Association Record, 74, 11, November 1972, pp. 213–15, 217.

Summarizes the main proposals of the *Scope for Automatic Data Processing in the British Library*. The principle of automation has already been accepted for the BL and planning is going ahead taking the Report's material into account.

LIBRARY ASSOCIATION. Cataloguing and Indexing Group.
The way ahead? *Catalogue and Index*, no. 28, Winter 1972, p. 4–12.

Recommendations of the Library Association Cataloguing and Indexing Group on the bibliographical services of the British Library.

HAVARD-WILLIAMS, Peter
Action now for open access in the new BM library.
Times Higher Education Supplement, 62, 22 December 1972, p. 1.

The case for open access to the British Library.

UNESCO. National Commission for the United Kingdom.
[Supplement to the U.K. entry in *Bibliographical Services throughout the world 1965–1969*, by P. Avicenne.]
Bibliography, Documentation, Terminology, 13, 1, January 1973, 27–31.

Includes a brief summary of the White Paper and of developments since.

DAMMERS, H. F.
Report of the National Libraries ADP Study: a review.
Program, 7, 2, April 1973, p. 83–85.

Comments on the comparative data used in the report 'The Scope for Automatic data Processing in the British Library', notably the King Report 'Automation and the Library of Congress'.

LEWIS, P. R.
Report of the National Libraries ADP Study: a review.
Program, 7, 2, April 1973, p. 86–8.

Automatic data processing is considered in relation to co-ordination and co-operation amongst the various agencies involved in the British Library.

PLUMB, Philip W.
The British Library's services: report on the November joint conference.
Information Scientist, 7, 1, March 1973, p. 14–19.

A joint conference held by Aslib, the Institute of Information Scientists, the Library Association, and the Society of Archivists discusses prospective British Library services.

LINE, M. B.
National library planning in the United Kingdom.
Australian Lib. J., 23, 1, February 1974, p. 5–15.

An account of the creation of the British Library and its relationships with the library system of the United Kingdom.

On-line information retrieval: some comments on the use of Retrospec 1 in an industrial library

E. C. Goodliffe
Head of Library and Records

S. J. Hayler
Librarian
British Aircraft Corporation, Stevenage

Introduction

THE ADVENT of the computer has forced many decisions on the industrial librarian. With all those around him using computers should he too jump on the bandwagon or should he stay with his traditional systems for catalogues, loans and recalls, information retrieval, selective dissemination of information, and so forth? All too often, librarians tend to be of one school or another; they will either computerize anything they can lay their hands on or they will steadfastly refuse to have anything to do with the computer. Decisions are based on impressions and prejudices rather than on any more rational basis.

Recently library staff at the British Aircraft Corporation (BAC) in Stevenage have had the opportunity to study the computer's performance in the field of on-line information retrieval: that is to say, where the user is seated at a terminal connected to the data base and is able to interact with the computer, modifying the search, if necessary, as he proceeds. This is in contrast to the off-line method where the user sends his request to a remote computer facility where it will be processed in due course and returned to him at some later date, hopefully containing a good proportion of relevant material and very little 'noise'. The above opportunity came about with the installation of a computer terminal in the BAC Engineering Group and the appearance of the Retrospec 1 on-line information retrieval system.

Retrospec 1

Retrospec 1 is an experimental, OSTI supported project with a data base specially selected from INSPEC *Computer and Control Abstracts* over the past three years. Coverage was thus restricted due to the limited amount of space available on the computer. Any user with access to a teletype-compatible data terminal connected to the telephone system is able to use Retrospec to process relevant information requests and to receive a direct answer.

The Retrospec 1 data base is in four broad subject divisions: systems and control theory; control technology; computer programming and applications; computer systems and equipment. These are subdivided into twenty-one subject partitions covering more specific areas such as systems theory and cybernetics, numerical analysis, logic elements and circuits, computer peripherals.

Searching is undertaken by selecting the partition(s) relevant to an enquiry and then interrogating it by means of a search statement. The search statement is a formulation of words used to describe the subject request and consists of one or more search terms linked by Boolean operators (AND, OR, AND NOT). Search terms may be dates, authors, etc., but for subject searches they are generally nouns and adjectives descriptive of the search topic. Thus, for a search statement using the two terms 'CARBON' and 'FIBRES' the Boolean operators would give the following alternatives:

(i) 'CARBON' *AND* 'FIBRES'—retrieve references dealing with 'CARBON' and 'FIBRES'
(ii) 'CARBON' *OR* 'FIBRES'—retrieve references dealing with 'CARBON' or 'FIBRES'
(iii) 'CARBON' *AND NOT* 'FIBRES'—references should deal with 'CARBON' but only without 'FIBRES'

A further factor to be borne in mind when formulating the search statement is that, as documents in the data base are indexed in natural language without any controlled vocabulary, the search term chosen should take account of the varying forms of a word. For instance, one would choose the search term 'POLLUT' to allow for 'POLLUTION', 'POLLUTE', and 'POLLUTING'. Likewise, one has to allow for variations within a subject by choosing terms that might be synonymous with those first thought of. For instance 'DATA BASE' and 'DATA BANK' are interchangeable.

Once the search statement has been compiled the computer compares it with terms used to index references in the data base and selects those references where there is a match.

The Experiment

It was decided to test Retrospec 1 over a variety of information requests and, so that there would be some yardstick for comparison, the same searches were also undertaken by a member of the library staff using the standard method of searching through abstracts and periodicals for references. Results could then be compared for such factors as time, cost, amount of information retrieved. The searches were of two kinds: comprehensive (where the user asked for as many references as possible) and selective (where the user merely asked for 'one or two' references on a particular topic). The selective searches were undertaken to test the theory that the value of the system might lie in such cases rather than in providing a more comprehensive listing.

Of the five searches carried out on Retrospec 1, four used the BAC terminal* and one that of the Science Reference Library. For the manual searches those resources normally available in the BAC Library were used but consultation was confined to the last three years (the period of the Retrospec 1 data base) so that any comparisons would be as fair as possible.

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* The terminal is an Olivetti TE 300 teletype.

So that some measure of user satisfaction could be gauged a distinction has been made, for both types of search, between the number of references found, the number which were relevant (excluding 'noise', false drops, etc.), and the number which were actually of direct interest to the user.

Times quoted for the respective searches have been taken from the time that the librarian began the search at the terminal or abstracts until the time that the last reference was printed out or listed.

Giving figures for cost comparisons presented some difficulty. The calculations listed in the following section are based on BAC Library staff time being costed at £1.30 an hour; this is the standard figure that would be charged within BAC for those staff classified as 'indirect' (i.e. would not be able to book their costs to any particular project). At first sight this figure might appear to be rather low for, if library costs were chargeable to a project or if the work were undertaken for any non-BAC personnel, then an overhead allowance of 167% would be made bringing the cost to £3.47 per hour. However, £1.30 per hour is the cost that BAC would charge for library staff time within the company and it was therefore decided that this was the more accurate figure. Computer costs were calculated by adding a BAC charge of 8p per minute to the bureau charge for use of Retrospec. The bureau charge is that figure printed out at the end of the search and is based on the amount of connect time the user spent at the terminal plus the amount of CPU-time that the search (as opposed to print-out) used. The figure of 8p includes cost of telephone lines, the rental of the teletype terminal, and the administrative costs of running the terminal. Thus the figure for manual searches is comprised solely of staff time whilst that for Retrospec consists of staff time plus the aforementioned computer charges. In order that all Retrospec charges would be constant the subsidised cost of the search undertaken at the Science Reference Library was recalculated to bring it into line with those searches carried out on the BAC terminal.

It was noted that there were many different ways to cost this exercise, possibly taking into account other factors such as floor space, furniture involved, and purchase of abstracts. However, it was concluded that these were irrelevant; the company is paying for both the library and the terminal whether or not Retrospec is used. Retrospec is a complementary tool, not intended to replace either staff or abstracts. To us the question was 'Do we or don't we use Retrospec at BAC?' The findings, with comments where appropriate, are presented in the following section.

The searches

1. Comprehensive search on *documentation standards for computer systems.*

A *By Retrospec 1:*

Search Statement: 'DOCUMENT' and 'STANDARD' and ('COMPUT' or 'SYST' or 'PROGRAM')

Fields searched: 8.1—general computer topics
8.3—programming systems, languages and processors
8.4—file organisation and data handling

8.5—information science and documentation
8.6—administrative data processing
8.8—other computer applications

No. of references found: 3
No. relevant: 2
No. of interest: 0
Time taken: 22 minutes
Cost of computer time: £3.67
Cost of staff time: £0.48
Total cost: £4.15
Average time per relevant reference: 11 minutes
Average cost per relevant reference: £2.075

B *Manually by library staff:*
No. of references found: 22
No. relevant: 16
No. of interest: 9
No. of references also found by Retrospec: 0
No. of references found in journals indexed by Retrospec but not printed out: 1
Where found: *Computer and Control Abstracts*—18
U.S. Government Reports Announcements—4
Time taken: 3 hours 40 minutes
Cost of staff time: £4.87
Average time per relevant reference: 13.7 minutes
Average cost per relevant reference: £0.34

Comment Retrospec costs were undoubtedly increased by the large number of fields searched and by an interruption in computer transmission which necessitated the search being started anew. However, manual costs could have been greatly reduced, with very little difference to the end result, by restricting the search to *Computer and Control Abstracts.*

2. Comprehensive search for any articles by *D. L. Kleinman.*

A *By Retrospec 1:*
Search statement: 'KLEINMAN, D.L.'
Fields searched: 6.4—systems theory and cybernetics
6.6—control theory
7.8—control applications
No. of references found: 2
No. relevant: 2
No. of interest: 2
Time taken: 7 minutes
Cost of computer time: £1.78
Cost of staff time: £0.16
Total cost: £1.94
Average time per relevant reference: 3.5 minutes
Average cost per relevant reference: £0.97

B *Manually by library staff:*
No. of references found: 12
No. relevant: 12
No. of interest: 12
No. of references also found by Retrospec: 2
No. of references found in journals indexed by Retrospec but not printed out: 0
Where found: *Computer and Control Abstracts*—9
Scientific and Technical Aerospace Reports—3
Time taken: 30 minutes
Cost of staff time: £0.65
Average time per relevant reference: 2.5 minutes
Average cost per relevant reference: £0.054

3. Comprehensive search on *file organisation of data bases.*

A *By Retrospec 1:*
Search statement: 'FILE' and 'ORGANI' and 'DATA' and ('BASE' or 'BANK')
Fields searched: 8.4—file organisation and data handling
8.5—information science and documentation
8.6—administrative data processing
No. of references found: 5
No. relevant: 5
No. of interest: 5
Time taken: 25 minutes
Cost of computer time: £3.60
Cost of staff time: £0.54
Total cost: £4.14
Average time per relevant reference: 5 minutes
Average cost per relevant reference: £0.828

B *Manually by library staff:*
No. of references found: 58
No. relevant: 58
No. of interest: 26
No. of references also found by Retrospec: 4
No. of references found in journals indexed by Retrospec but not printed out: 16
Where found: *Computer and Control Abstracts*—54
Scientific and Technical Aerospace Reports—1
International Aerospace Abstracts—1
British Technology Index—1
U.S. Government Reports Announcements—1
Time taken: 3 hours 48 minutes
Cost of staff time: £4.95
Average time per relevant reference: 3.9 minutes
Average cost per relevant reference: £0.0853

Comment Using the aforementioned search statement which, to all intents and purposes, seemed logical and was suggested by the enquirer himself, the Retrospec result was disappointing. Seven references were found, although two of these were actually duplicates. However, when a later search was attempted on the same topic, under guidance from INSPEC personnel, the results were markedly different. It was suggested that as 'DATA', 'FILE', 'BASE', and 'BANK' were all implied by the fact that the data base was restricted to *Computer and Control Abstracts* the search statement should merely be 'ORGANI' and the field searched be restricted to 'file organisation and data handling'. This time 39 references were found of which 22 were relevant. References which one would have expected to be retrieved in the original search were now printed out although, on the other hand, a reference on the 'automatic sorting of infra-red spectra' was also selected. Cost and time factors per relevant reference were obviously improved; time was approximately halved and the cost was reduced to under £0.30.

Again, however, by restricting the search to *Computer and Control Abstracts* the manual results would have been substantially different. Here 54 relevant references would have been found in only 65 minutes; the average cost per relevant reference would thus have been reduced from 8.53p to 2.7p and the average time from 3.9 minutes to 1.2 minutes.

4. Selective search on *decision tables*

A *By Retrospec 1:*

Search statement: 'DECISION' and 'TABLE'
Fields searched: 6.2—mathematical techniques
6.4—systems theory and cybernetics
8.3—programming systems, languages and processors
8.4—file organisation and data handling
8.5—information science and documentation
No. of references found: 7
No. relevant: 6
No. of interest: 4
Time taken: 20 minutes
Cost of computer time: £3.52
Cost of staff time: £0.43
Total cost: £3.95
Average time per relevant reference: 3.33 minutes
Average cost per relevant reference: £0.66

B *Manually by library staff:*

No. of references found: 8
No. relevant: 8
No. of interest: 5
No. of references also found by Retrospec: 1
No. of references found in journals indexed by Retrospec but not printed out: 6
Where found: *Computer and Control Abstracts* (1973–4)—8

Time taken: 25 minutes
Cost of staff time: £0.54
Average time per relevant reference: 3.12 minutes
Average cost per relevant reference: £0.067

Comment For this type of non-comprehensive search Retrospec does have the facility for limiting the number of references retrieved or the amount of computer costs incurred; however, neither of these facilities was used so the search was in fact comprehensive. The search statement needed no allowance for synonyms or word forms and the subject fields were suggested by the enquirer. Relevant references were found in two of the five subject fields chosen. The length of the search was once more extended by an interruption in the computer transmission.

A second search on this topic was undertaken at a later date, but this time with the knowledge that the quick manual search had been confined to subdivision 8.1 (general computer topics) of *Computer and Control Abstracts*. Again, no limitation was placed on the cost incurred or number of references retrieved. This time, by restricting the search to 8.1, seven relevant references were found, only one of which had appeared in the first Retrospec search. Thus, for a quick search, it was shown here that relevant references could be retrieved more speedily than by the manual method, but the cost was still more than four times as much.

5. Selective search on *virtual storage*

A *By Retrospec 1:*
Search statement: 'VIRTUAL' and ('STORAGE' or 'ACCESS')
Fields searched: 8.3—programming systems, languages and processors
8.5—information science and documentation
9.5—digital storage devices and techniques
No. of references found: 5
No. relevant: 5
No. of interest: 5
Time taken: 14 minutes
Cost of computer time: £2.05
Cost of staff time: £0.32
Total cost: £2.37
Average time per relevant reference: 2.8 minutes
Average cost per relevant reference: £0.47

B *Manually by library staff:*
No. of references found: 9
No. relevant: 9
No. of interest: 6
No. of references also found by Retrospec: 1
No. of references found in journals indexed by Retrospec but not printed out: 3
Where found: *Computer and Control Abstracts* (1973)—9
Time taken: 24 minutes

Cost of staff time: £0.52
Average time per relevant reference: 2.66 minutes
Average cost per relevant reference: £0.057

Comment Although selective, no limitations of cost or number were placed on the Retrospec search; however, the number of relevant references was still less than expected. The search was undertaken a second time and restricted to the subdivision 9.5, but this time with the search statement 'VIRTUAL' and 'MEMOR'. Now four fresh hits were found. The enquirer had helped to formulate the original search statement and had not thought to suggest 'virtual memories' as a possible alternative for 'virtual storage'; these hits were thus omitted in the first Retrospec search. However, during the selective manual search the member of library staff had used her discretion and included references on 'virtual memories' when she came across them.

Conclusions

As far as BAC is concerned the main conclusions from the comparison can be summarised as follows:

1. It was found to be in the region of ten times cheaper to search manually than by Retrospec, though in one case it was nearly twenty times cheaper.
2. Generally there was very little difference in the time taken by either method to locate and list relevant references.
3. The manual search produced a more comprehensive answer for the enquirer.

Using Retrospec 1

The Terminal

The average librarian's initial reaction to the prospect of conducting a search from a computer terminal would probably be one of uncertainty. The multiplicity of instructions in the user manual, the variety of keys available, the need for absolute accuracy in punctuation, spacing, etc., all combine to produce a slightly daunting picture. However, a little application soon familiarizes one with the system and, as long as one uses it accurately and does not panic when a mistake is made, Retrospec is not difficult to operate. One will always be faced with this initial familiarization procedure, so it would seem that effective use of the system would entail the search being conducted by a member of library staff rather than by each enquirer, with or without guidance. The manual searching of abstracts does allow one a little more freedom of action in this respect.

It would seem that a major problem facing the librarian, particularly in the environment at BAC, is the availability of the terminal. With a large number of busy engineers in the vicinity the librarian cannot always gain access at his own convenience. Once the terminal is accessible the possibilities of queuing because the system operates on a time-sharing basis or of a breakdown or interruption in computer transmission would only cause minor delays. The real problem is the availability of the terminal; there is no point at all in being on-line if one has to wait for a day before being able to conduct a search. The librarian's panacea in this case must be a terminal of his own.

The Data Base

The inadequacy of the data base was found to be a major fault in Retrospec 1 and is a matter on which its future success is dependent to a great extent. As the project is being run on an experimental basis one can accept that it should cover the last three years of *Computer and Control Abstracts* and nothing more. However, one is loath to accept the shortcomings from here on. No reports, theses, conferences or foreign language publications are included; even those journals that are indexed are not given comprehensive coverage. Furthermore the data base is only updated every three months. Thus, when these comparative searches were undertaken, *Computer and Control Abstracts* for December 1973 and January 1974 were available for the manual search whereas Retrospec 1 was updated only to November 1973.

The advantages offered by Retrospec would appear to be for large-scale comprehensive searches rather than for a few quick references, where any time saving would be minimal. Here the computer has the ability to save the librarian many laborious hours of searching and listing, possibly even allowing him to undertake other work whilst waiting for the terminal to print out results. However, Retrospec will not be used with confidence if it is felt that a large proportion of relevant references will not be retrieved.

Searching

Given that one has an adequate data base it is the search process that offers most scope for error with on-line retrieval, and it is an area in which Retrospec 1 did not fully utilize its assets.

Manual searching is a fairly simple matter. One has a definite idea of which indexes or abstracts to use, one is referred to the appropriate section for one's enquiry and one selects the required references. If necessary, there are cross references to notify one of other relevant areas, abstracts may be consulted for the more abstruse articles, and the search may be modified whilst in progress merely by using a little commonsense (witness the manual search on virtual storage).

One has a contrasting experience when searching Retrospec. Because of the particular data base structure used, one could be faced with the prospect of searching the complete file for references on any one topic; not unnaturally, this would add considerably to the cost. To overcome this problem the Retrospec data base is split up into a number of subject partitions and the user searches the minimum number compatible with economic and efficient retrieval. To assist the enquirer in this selection some idea of the contents of each partition can be found in the user manual or printed out by the system. However, experience with the five searches has shown that this is not the same as having a subject index which would lead the user directly to the correct partition. Consequently, when searching Retrospec generally more partitions than necessary were searched, thus greatly increasing the cost. Conversely, the search on decision tables did not include the very division that contained the bulk of the references on this topic. As the divisions searched were largely decided by the enquirers a lack of subject expertise would not appear to be the reason for these mistakes. A subject index becomes even more necessary when it is realised that separate references to one topic can appear in a number of divisions (e.g. decision tables), whereas on the other hand searching of an extra division might only produce duplicates of references already found (as happened in the search on file organisation of data bases). Under the present arrangement Retrospec users are faced with the prospect of either searching too many fields and increasing the cost or searching too few and possibly missing relevant material.

Having decided which divisions to search the next step is the formulation of the search statement. Here one must attempt to find a match with articles which have been indexed freely in natural language. With no controlled vocabulary to guide one the choice of synonyms becomes a matter of hit or miss (e.g. see comments on virtual storage search), even for the enquirer. Armed with a list of terms and synonyms relevant to the enquiry the searcher must next form his Boolean expression and decide on a truncation that will allow for all varieties of a word. Although one has to be very precise one will undoubtedly improve with practice. Even so, searches threw up references on the 'Markovian decision process' when searching for 'decision tables' (retrieved by 'MARKOVIAN *DECISION* PROCESS and COUNT*ABLE* STATE SPACE') and on 'automatic sorting of infrared spectra' when searching for 'file organisation of data bases' (retrieved by IDENTIFICATION OF *ORGANIC* COMPOUNDS). Doubtless one will always obtain false drops in any on-line retrieval system; however, it is believed that the existence of a controlled vocabulary to help in the formulation of the search statement would eliminate a number of these and retrieve a greater number of relevant references by helping to reduce the human fallibility of both user and indexer. The authors do not believe that BAC users are interested in carrying out 'their own searches in their own terms' but more that they desire an efficient answer to their enquiry, however it is obtained.

As well as the facility for searching by subject descriptors, Retrospec also has the ability to search by author. A useful extension of this would be the ability to search by journal title as well.

The main conclusion reached on searching Retrospec was that it was a tricky process not made any easier by the lack of guidance in some areas. It has been said that the computer is far more efficient than the human being at searching a data base for references; however the computer, lacking the ability to think, is only as efficient as its operator, and it is for this reason that on-line retrieval systems must be as simple to operate as possible to utilize their advantages to the full.

With regard to manual searching the exercise showed that library staff are not as cost-effective as they might be. Users must be more fully interrogated as to their search requirements to ensure that items of no personal interest are not presented to them; one of the enquirers rejected references because they were theses or they came from a particular journal; obviously this waste of time could have been avoided if he had been properly questioned. Secondly, one cannot afford to search too wide an area, even for a comprehensive request. The manual search on 'file organisation of data bases' retrieved 54 references from *Computer and Control Abstracts* in only 65 minutes. A further 163 minutes were then spent searching through a variety of sources to retrieve an extra four references; again a fact that cannot be justified on grounds of cost.

Print-out

Print-out speed of the terminal teletype offers significant advantages for on-line retrieval. The amount of time the computer spends in searching the data base for relevant references can be measured in seconds. Add to this the fact that the BAC terminal prints out the results at ten characters a second and it is seen that the whole process can be carried out faster than by any librarian. However, if this print-out speed could be doubled or even trebled the advantages, particularly on a long search, would be tremendous.

The actual format of the print-out is to be commended. As opposed to many computer listings that tempt one to throw them straight into the waste paper basket the Retrospec print-out is extremely well arranged and, with a little modification, could be given direct to a user in the same way as a typed list or a set of handwritten cards.

Costs

To judge by these experiments it would seem that Retrospec is at present more costly to use than manual methods. It is suggested that Retrospec can undertake a useful search for as little as 50p. Whilst this is admittedly true it ignores the two other cost factors involved. Staff time still has to be paid for whether or not one uses a computer. More important perhaps is the cost of terminal time; as mentioned this was 8p per minute at BAC. It is also possible that terminal costs will vary according to the time of day with higher charges being made at peak periods.

At the moment then it is hard to justify this system on grounds of cost; but this envisages the use of the computer as a complementary tool. If one could place a greater reliance on the speed and scope of on-line retrieval, libraries might be able to dispense with their large and costly abstracts collections as well as saving a considerable amount of time. However, one wonders whether the sponsors of any such systems would take into account the possible loss of revenue from the sale of abstracts when deciding on a marketing price. There seems an obvious parallel with microform publishing in this respect.

Attitudes

As with microforms, more attention should perhaps be paid to the varying reactions that on-line retrieval evokes. The three separate groups identified were librarians, users, and management.

Initially, the attitude was that Retrospec was a system that would retrieve more information than the library staff and retrieve it more quickly. As it stands at the moment, however, it is not the universal answer and it is unlikely that it would be seriously considered for use in any search. The authors have not become anti-computer, but have just come to realise its present limitations. They do, in fact, look forward to the time when these limitations are overcome and Retrospec will be a genuine time saver.

Users seemed to lack the library staff's enthusiasm, possibly as one cynic suggested because they knew a lot more about computers. One user had already been unfavourably impressed with an on-line SDI service and was probably prejudiced before he began. The impression gained from discussions was that enquirers would still rather deal with a member of library staff than conduct a search at the terminal themselves. How these enquiries were dealt with would then be a matter solely for the librarian, as long as the final result proved to be satisfactory.

Management response was most interesting of all, for management were basically offered a saving of staff time in return for a larger expenditure on the library budget. Staff time has to be paid for whatever and any savings will not be immediately apparent in the balance sheet. However a large increase in one's annual budget is an open invitation for management comment. The reaction of the Engineering Manager at BAC may be noted in this respect. He has overall responsibility for the library services and is also responsible for the allocation of funds to the whole of the Engineering Group. His reaction was to actively encourage us to explore the possibilities of on-line retrieval. Extra costs of some two to three hundred pounds for searching were regarded as reasonable so long as the librarian felt he was deriving some benefit from this; it was not felt that any drastic saving in manpower should result from this expenditure. If, however, one proposed to spend a thousand pounds or more on a system it would then have to be justified much more stringently and some more tangible advantages would have to be apparent to management. The same attitudes prevailed with regard to a commercial SDI service introduced at BAC some years ago. The provision of one or two profiles was readily accepted, but suggestions that a large number of engineers should be covered at costs of £50 per profile per annum were greeted with rather less enthusiasm. It seems that management will accept on-line retrieval or any other computerized technique, but when large sums are involved they obviously expect some definite return on their investment.

The future

From the authors' point of view any judgement of Retrospec 1 must be tempered by two facts: firstly, this is strictly an experimental system and is still being evaluated; secondly, they themselves were in a learning situation and greater experience might have led to some improvement in the results. However, the user finds himself paying for this learning process and the Retrospec guides do not help him as much as they might in this respect.

As already stated, it is not considered that Retrospec is a viable proposition to use at present, but its very faults have served to illustrate its potential. If the terminal was easier to use; if the data bases were more comprehensive; if searches could be formulated so that all relevant material were retrieved; if all of these could be achieved, then the librarian would have a tool which would save him those lengthy periods spent poring over abstracts and indexes. However, until Retrospec fulfils these promises BAC library staff are resigned to the fact that they will still be spending many hours with *Computer and Control Abstracts.*

Experiences with an in-house mechanized information system

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Paper presented at an Aslib evening meeting, 13th March 1974

Introduction

TECHNICAL INFORMATION Systems (TIS) is the department responsible for the flow of techno-commercial information in the Strip Mills Division of the British Steel Corporation (BSC). To give some idea of its size, the Division employs 64,000 people, has a gross turnover of around £600 million and has a number of steelmaking and finishing plants in the U.K., the majority being in Wales. TIS has been operating in its present form since 1968 when the industry was nationalised, and its initial aim from which it has not deviated was to set up small localised information units at each large works with a major back-up facility at the Research Centre, Port Talbot.

The 'TOTAL' concept

Nationalisation provided the opportunity to examine the information needs in depth and to prune and redeploy manpower to best meet those needs. The 'TOTAL' concept arose from this, whereby it was sought to establish what functions should be provided, who should benefit from them, how and what information should be collected and how it should be stored, manipulated and disseminated. A one-time recording of information was desired which would reduce effort and error to an absolute minimum and, in 1969, a research project was launched, aiming to cut costs and corners in providing information primarily to the Division but also to its customers and to other parts of the Corporation. The project areas can be summarised in Figure 1.

An early decision had to be taken on programming assistance and it was decided that the Division's Systems Development Department was in a more favourable position to assist than any other group. Recruiting one's own systems/programming staff was discounted as it was felt that such staff would have difficulty obtaining the cooperation and experience gained by staff who had trained and developed on the local works computers. At the same time a decision had been taken to seek time and space on the works IBM 360/50 as this offered the cheapest solution to TIS needs.

In autumn 1969 the first Visual Display Units (VDUs) in BSC were purchased at Port Talbot and one of these was housed at the Research Centre to be used for the creation of a computer-stored library catalogue. At that time the choice of VDUs was limited and therefore, one might say, easier, but the most IBM-compatible machine was chosen which would meet the system requirements. It had already been decided to move direct to on-line disk storage and input via a VDU and ignore the other forms of storage and input for the purposes of generating a library catalogue.

The VDUs purchased were Sanders 720 machines; these were linked via Post Office modems to the 360/50 by a direct line. The 720 machines were clustered around large control units which proved too limiting in that the whole cluster required to be hard wired to the control unit and therefore did not allow for terminals to be sited some distance away. Also these control units proved to be rather sensitive to movement and caused frequent loss of data from the screen. Nevertheless in the early stages they were adequate for TIS needs, until Spring 1972 when stand-alone models became available. Sanders 620 series models incorporate their own built-in control units and merely require a jack-plug and a modem to function anywhere. Their editorial facilities are much superior to those of the 720 series but their use has involved some reformatting of data to allow for the fact that each line of formatted data is stored between start and stop deltas which slightly reduces the number of characters available on the

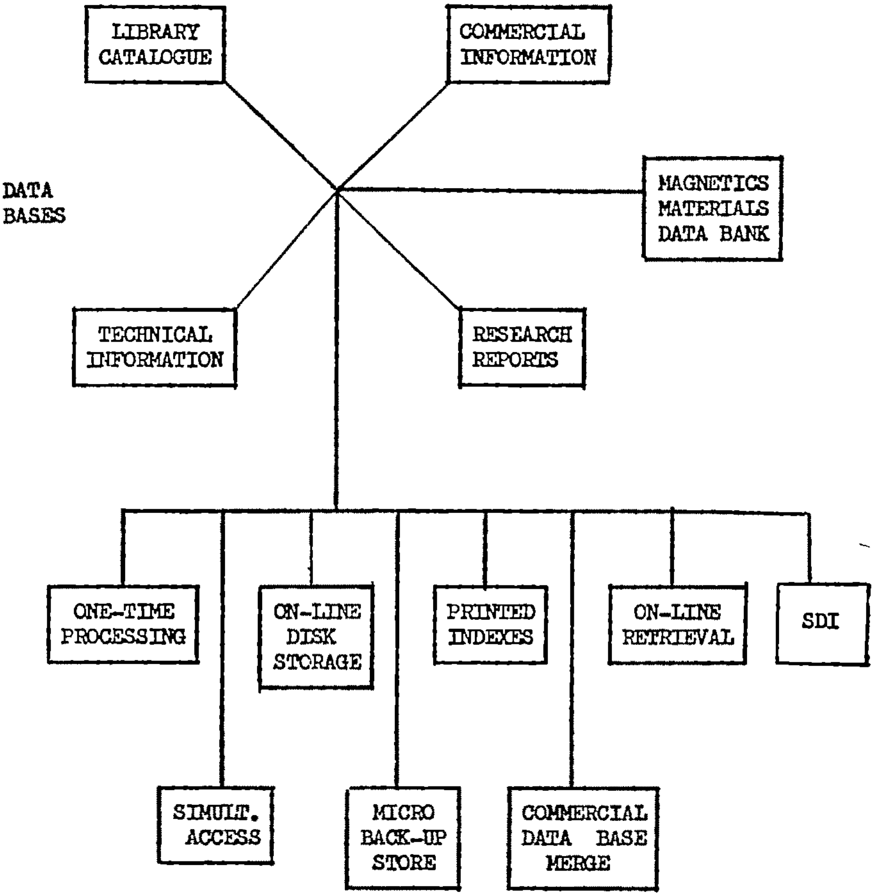
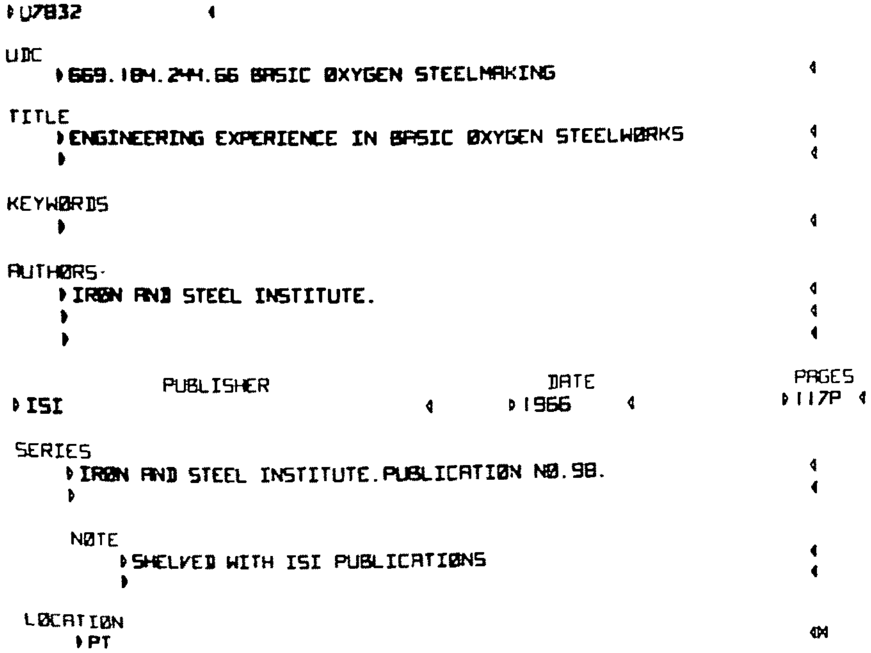


FIG. 1: *Information system project areas*

screen. The total number of characters available for formatting on a 620 series terminal is 1011; this was felt to be adequate for all needs except retrospective searching (discussed later). The introduction of the 622 model in the 620 series meant that inputting and accessing data from widely spaced locations could be considered. This could have been done with teletype compatible VDUs but these lacked the rapid formatting facilities. Also, the cheaper VDUs did not allow one to display formatted data rapidly but operated on the roll-up principle of displaying one line at a time.

Library Catalogue creation

A decision was taken in 1969 to abandon the various card catalogues scattered around the Division, to recatalogue the entire collection of library material by UDC, and to generate a sheaf catalogue which could be supplied, with updating at frequent intervals, to each of the satellite units.[1] A minimal cataloguing entry was sought and, having analysed the requirements, a format was created which would allow storage of all data pertinent to a book or pamphlet in the area of 1000 characters, i.e. one screenful. The next step was to write a suite of programs which would extract data from the on-line file, sort relevant fields into author, UDC, subject or title-word order, and print. Considerable thought was given at this stage to compressing as much data as was reasonably possible onto the printout. A double column layout was designed which has proved to be economical and presentable. The input format is shown in Figure 2.* The output



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▶U7832          ◀

UDC
    ▶669.184.244.66 BASIC ØXYGEN STEELMAKING                              ◀

TITLE
    ▶ENGINEERING EXPERIENCE IN BASIC ØXYGEN STEELWØRKS                    ◀
    ▶                                                                     ◀

KEYWØRDS
    ▶                                                                     ◀

AUTHØRS·
    ▶IRØN AND STEEL INSTITUTE.                                            ◀
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▶ISI                                      ◀      ▶1966      ◀        ▶117P ◀

 SERIES
    ▶IRØN AND STEEL INSTITUTE.PUBLICATIØN NØ.98.                          ◀
    ▶                                                                     ◀

     NØTE
        ▶SHELVED WITH ISI PUBLICATIØNS                                    ◀
        ▶                                                                 ◀

 LØCATIØN                                                                ◀▶
     ▶PT
```

FIG. 2: *Library record format*

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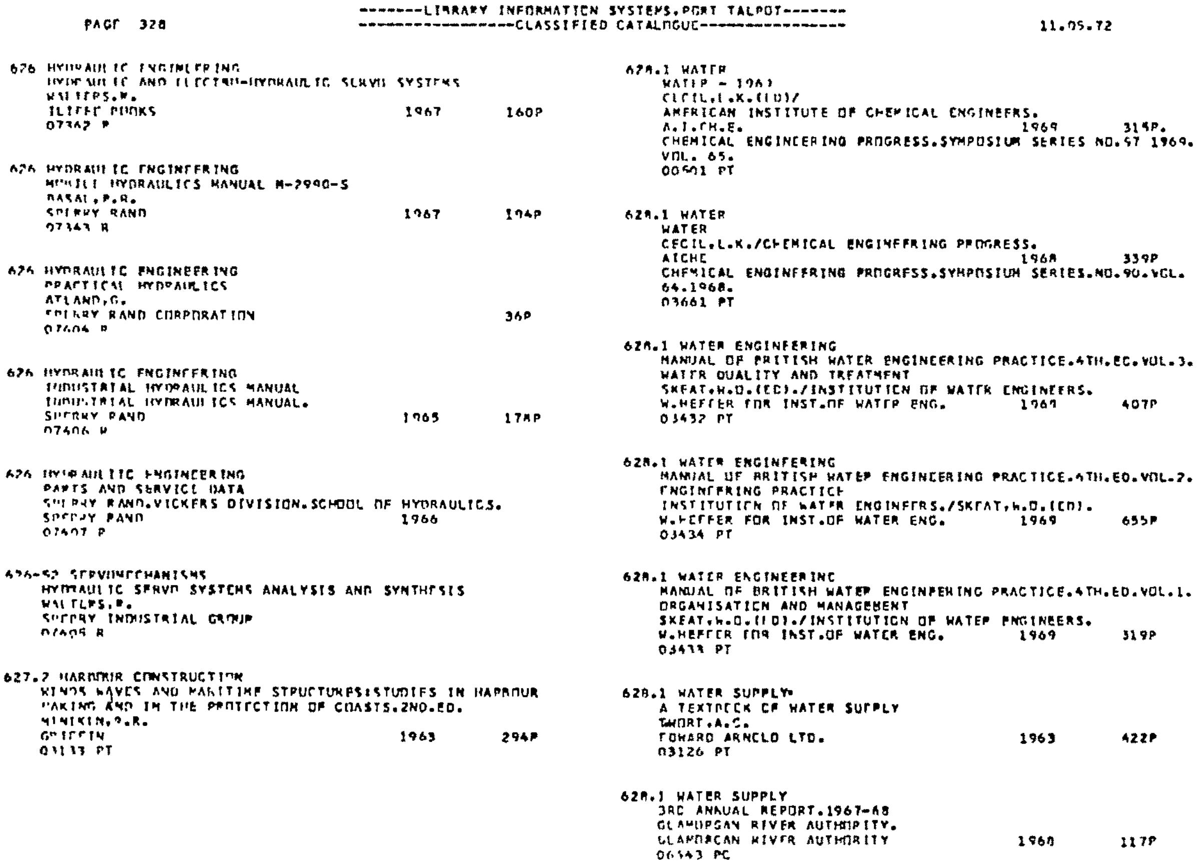
* For the sake of clarity and to minimize printing difficulties, the screen images in this text have been reversed.



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                     -------LIBRARY INFORMATION SYSTEMS,PORT TALBOT-------
PAGE  328            ----------------CLASSIFIED CATALOGUE---------------              11.05.72

676 HYDRAULIC ENGINEERING
    HYDRAULIC AND ELECTRO-HYDRAULIC SERVO SYSTEMS
    WALTERS,R.
    ILIFFE BOOKS                              1967        160P
    07362 P

676 HYDRAULIC ENGINEERING
    MOBILE HYDRAULICS MANUAL M-2990-S
    BASAL,P.R.
    SPERRY RAND                               1967        194P
    07343 R

676 HYDRAULIC ENGINEERING
    PRACTICAL HYDRAULICS
    ATLAND,G.
    SPERRY RAND CORPORATION                               36P
    07404 P

676 HYDRAULIC ENGINEERING
    INDUSTRIAL HYDRAULICS MANUAL
    INDUSTRIAL HYDRAULICS MANUAL.
    SPERRY RAND                               1965        178P
    07406 P

676 HYDRAULIC ENGINEERING
    PARTS AND SERVICE DATA
    SPERRY RAND.VICKERS DIVISION.SCHOOL OF HYDRAULICS.
    SPERRY RAND                               1966
    07407 P

676-52 SERVOMECHANISMS
    HYDRAULIC SERVO SYSTEMS ANALYSIS AND SYNTHESIS
    WALTERS,R.
    SPERRY INDUSTRIAL GROUP
    07405 R

627.2 HARBOUR CONSTRUCTION
    WINDS WAVES AND MARITIME STRUCTURES:STUDIES IN HARBOUR
    MAKING AND IN THE PROTECTION OF COASTS.2ND.ED.
    MINIKIN,R.R.
    GRIFFIN                                   1963        294P
    03133 PT

628.1 WATER
    WATER - 1967
    CECIL,L.K.(ED)/
    AMERICAN INSTITUTE OF CHEMICAL ENGINEERS.
    A.I.CH.E.                                 1969        315P.
    CHEMICAL ENGINEERING PROGRESS.SYMPOSIUM SERIES NO.97 1969.
    VOL. 65.
    00501 PT

628.1 WATER
    WATER
    CECIL.L.K./CHEMICAL ENGINEERING PROGRESS.
    AICHE                                     1968        339P
    CHEMICAL ENGINEERING PROGRESS.SYMPOSIUM SERIES.NO.90.VOL.
    64.1968.
    03661 PT

628.1 WATER ENGINEERING
    MANUAL OF BRITISH WATER ENGINEERING PRACTICE.4TH.ED.VOL.3.
    WATER QUALITY AND TREATMENT
    SKEAT,W.O.(ED)./INSTITUTION OF WATER ENGINEERS.
    W.HEFFER FOR INST.OF WATER ENG.           1969        407P
    03432 PT

628.1 WATER ENGINEERING
    MANUAL OF BRITISH WATER ENGINEERING PRACTICE.4TH.ED.VOL.2.
    ENGINEERING PRACTICE
    INSTITUTION OF WATER ENGINEERS./SKEAT,W.O.(ED).
    W.HEFFER FOR INST.OF WATER ENG.           1969        655P
    03434 PT

628.1 WATER ENGINEERING
    MANUAL OF BRITISH WATER ENGINEERING PRACTICE.4TH.ED.VOL.1.
    ORGANISATION AND MANAGEMENT
    SKEAT,W.O.(ED)./INSTITUTION OF WATER ENGINEERS.
    W.HEFFER FOR INST.OF WATER ENG.           1969        319P
    03433 PT

628.1 WATER SUPPLY
    A TEXTBOOK OF WATER SUPPLY
    TWORT,A.C.
    EDWARD ARNOLD LTD.                        1963        422P
    03126 PT

628.1 WATER SUPPLY
    3RD ANNUAL REPORT.1967-68
    GLAMORGAN RIVER AUTHORITY.
    GLAMORGAN RIVER AUTHORITY                 1968        117P
    06543 PC
```

FIG. 3: *Classified index to library catalogue*

for the main catalogue entries (Figure 3) is photo-reduced on a Rank-Xerox Computer Form Printer (CFP) before being sheafed into binders for distribution to the satellite units. Printout cumulations take place at intervals similar to the practice of B.N.B., i.e. monthly, quarterly, six monthly, nine monthly, with a complete reprint of the whole catalogue annually.

In practice, the typists have adapted rapidly to the keyboard of a VDU and have quickly assimilated the basic commands of the system. One particular editorial 'assist' feature which has proved invaluable is the ADDSEQUENTIAL routine whereby on commencing to input at the beginning of the day the typist types the following instruction on the screen.

```
ADDSEQ ZZP3 00001
```

whereupon the program finds the library file ZZP3, looks for the last recorded accession number and then proceeds to display the file name, the next number and a blank format. When the typist has entered this record she sends it to the on-line file by depressing the send button. The cursor rapidly scans the record, transmits it and then comes up with the next accession number and blank record, whereupon the next item can be entered and the whole exercise repeated. A further useful editorial feature is that because each line of data is stored between start and stop deltas one can, by depressing the stop delta key, move rapidly to the beginning of each new line or field. This has proved to be invaluable when entering or amending records. The use of VDUs has taught typists that all errors are faithfully transcribed and because they have to make their own corrections when check lists of input are received from the Computer Department they have become more accurate in their typing.

Techno-commercial information input

The bulk of the SDI activity in Strip Mills Division centres around a series of single-sheet subject oriented bulletins appearing at intervals ranging from one week to one month and disseminated to audiences ranging in size from 100 to 2,000. All of these bulletins, between them generating some 8,000 items a year, are typed on paper tape typewriters. The tapes are edited and re-run onto paper masters for the required printing runs; a precautionary duplicate tape is made in case of mishaps in the Computer Department. Tapes, together with a deck of job control cards are sent to the computer department and, after feeding through a tape-reading device and code translator routine, are added to the appropriate on-line file. A suite of KWOC programs with varying forms of printout is then available to create indexes from the various files. Records are called up on the VDU in order to make any necessary corrections and also to add the necessary string of keywords to the title.

KWOC indexes

When it was decided that keyword indexes would be required for the various data bases, commercially-available packages such as TEXTPAC were examined to determine whether they could be run on an in-house computer or whether a bureau machine could be used. The major drawback in these packages was felt to be that none had been written to accept data that was not tagged with field indicators. In order to simplify input, tabs and carriage returns punched on the paper tape had been used as field indicators, thus ensuring that the screen formats closely followed bulletin formats. This meant that typists who are accustomed to memorising layouts did not also have to remember field tags or ensure that these were used accurately. Apart from this, TIS was not impressed with demands made in terms of core storage, number of tape and disk drives required by TEXTPAC. KWIC, SLIC and other indexes did not appeal in the same manner as KWOCs and after early experiments with a stop list and running an in-house KWOC program on technical and commercial titles, it was decided

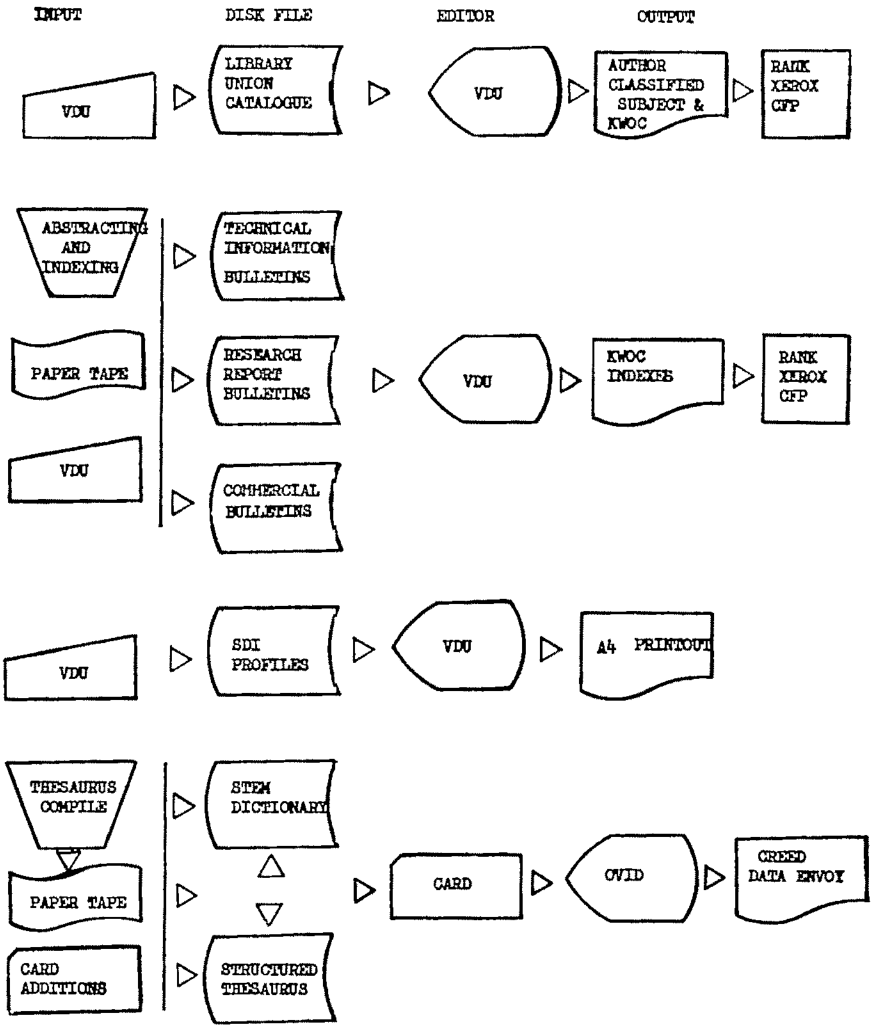


FIG. 4: *Main input, edit and output modes employed by Technical Information Systems*

to adopt a fresh approach. The use of a stop list was dropped and instead a string of keyword identifiers was added after the title of each record. The string was preceded by an asterisk and the KWOC program was modified so that it would search the title for the asterisk, extract the keywords, sort and print title and/or keywords, as required. At the same time attention was given to ways and means of minimising the unhelpful entries one normally associates with KWIC/KWOC indexes and the use of two symbols was introduced to save indexing time, and also reduce the number of entries in the index. Briefly, the indexer links two terms with a question mark when he requires only an entry under the first with the second as a subheading.

e.g. LIME? PRODUCTION

When the indexer wishes to invert two combined terms so that they each appear in their own right in the index with the other term as a subheading he links the terms with an ampersand.

e.g. COKE OVENS & US STEEL

It was a relatively simple matter to write a routine which would recognise these symbols and perform the necessary extraction, sort and print.

Thesaurus development

In order to produce meaningful, efficient and economic indexes TIS moved towards adopting a standard terminology to describe the subjects of interest to the Division. A study was made of all available technical thesauri to determine whether any of these could be used as a basis for indexing in the steel industry. Eventually it was decided that by analysing the literature which had been internally indexed in the previous three years, examining the information requests in the same period and constructing schedules in conjunction with specialist departments within the industry, a minimal thesaurus could be produced which could be used as a standard throughout the Division.[2] It was thought that keywords should be unique and as concise and meaningful as possible in order to minimise the effort required in linking terms, since this would become more important when on-line retrospective searching was developed.

The thesaurus is structured: each broad term is capable of being broken down into a further three levels of increasing specificity. Where necessary, a facet level can be assigned to a group of terms which warrant a common subset of facets. Similarly a universal facet level is available which can be combined with any term in the thesaurus. An illustration of the complete structured principle with all the assigned levels indicated is shown below.

- 01 CASTING
  - 02 Ingot Casting
    - 03 Ingot Moulds
      - 04 Ingot Moulds Fluted
        - 05 CASTING BAY
          - 06 FAILURE

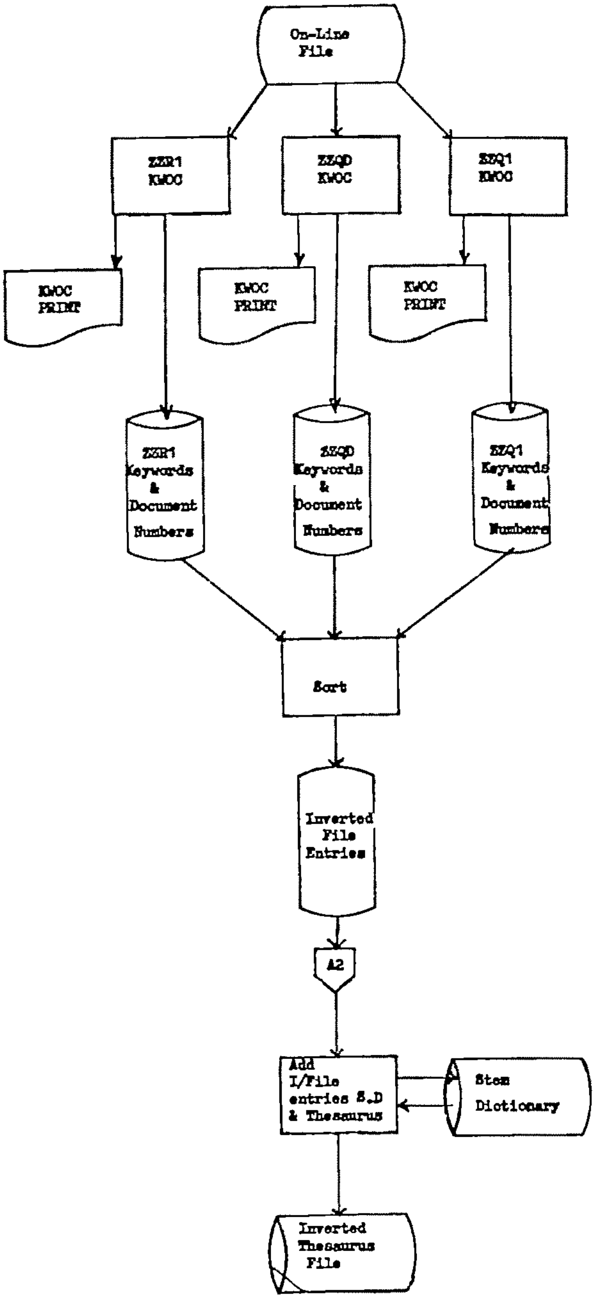


FIG. 5: *Database merge flowchart*

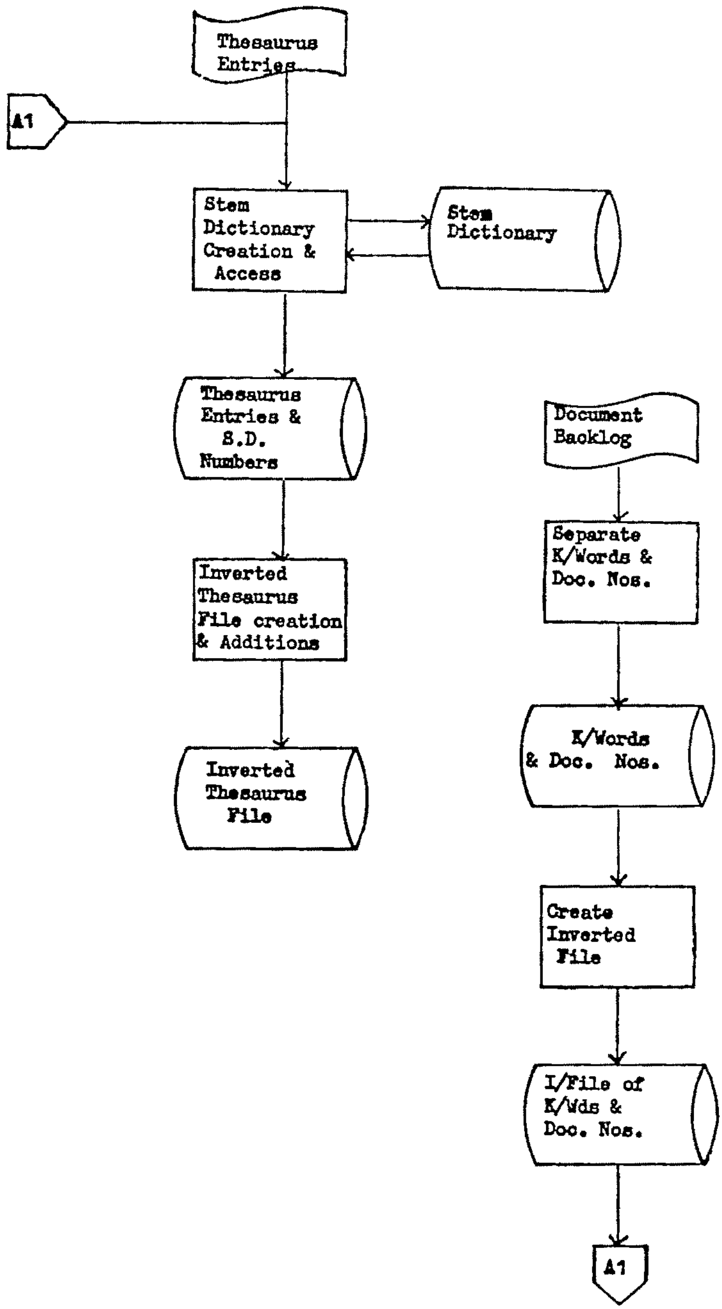

Thesaurus Entries
A1
Stem Dictionary Creation & Access
Stem Dictionary
Thesaurus Entries & S.D. Numbers
Inverted Thesaurus File creation & Additions
Inverted Thesaurus File
Document Backlog
Separate K/Words & Doc. Nos.
K/Words & Doc. Nos.
Create Inverted File
I/File of K/Wds & Doc. Nos.
A1

FIG. 6. *Inverted thesaurus file creation and additions*

The universal facet level (06) can contain, apart from general keywords, names of countries, companies, trade names or place names. In order to use the thesaurus as an inverted file for retrospective searching, certain limitations had to be made and accepted.

The thesaurus was initially typed on a tape-typewriter in its structured form and stored on disk together with a stem dictionary. This dictionary serves to indicate predecessors and successors of each term and to point to their places in the main thesaurus file. Having written programs to store data on these two files, a further routine was written to print an alphabetical version of the thesaurus in three column form as an indexing aid. In this, terms are printed alphabetically in the central column with predecessor and successor terms displayed in the left and right hand columns respectively. Keywords are limited to a maximum length of thirty-five characters and each keyword can have a maximum of forty subdivisions. The inverted file itself allows a maximum of 1000 documents to be stored under each term before resorting to overflow elsewhere on the disk.

Retrospective searching

These limitations, if they can be called such, were necessary for the efficient operation of retrospective searching in a low core storage partition in the works IBM 360/50. Whilst activities had been limited to input and editing of records via VDUs, a 14K partition was shared with other departments. The need for multi-access in the Division as a whole meant that a larger partition had to be made available to accommodate SPREAD, a Support Program for Remote Entry of Alphanumerical Displays. This had been designed by Systems Development Department to run under OS, primarily to support the two terminals by now being used by TIS and also to control all the VDUs being installed by the Commercial Department. SPREAD supports application programs written in high or low level languages in an overlay structure and uses the 360 operator's console as the control terminal for the system. It is written in ASSEMBLER but sets up the necessary linkage requirements for PL/1 subroutines. Messages are translated to EBCDIC code on entry and to USASCII before exiting as the former is used as the in-house machine code.

On-line VDU interrogation of data bases (OVID)

OVID has grown up from the combination of VDU availability and the structured thesaurus concept. A simple interrogation mode was sought, capable of use by non-information personnel who were able to type brief commands and keywords to the system. Touch-wire systems had been investigated but it was felt that these were limited in terms of the size of the matrix that could be displayed. The formatting capabilities of the Sanders VDU with data stored in tagged fields meant that one could design formats which required a minimum of typing ability and which would allow the enquirer to tab rapidly from field to field.

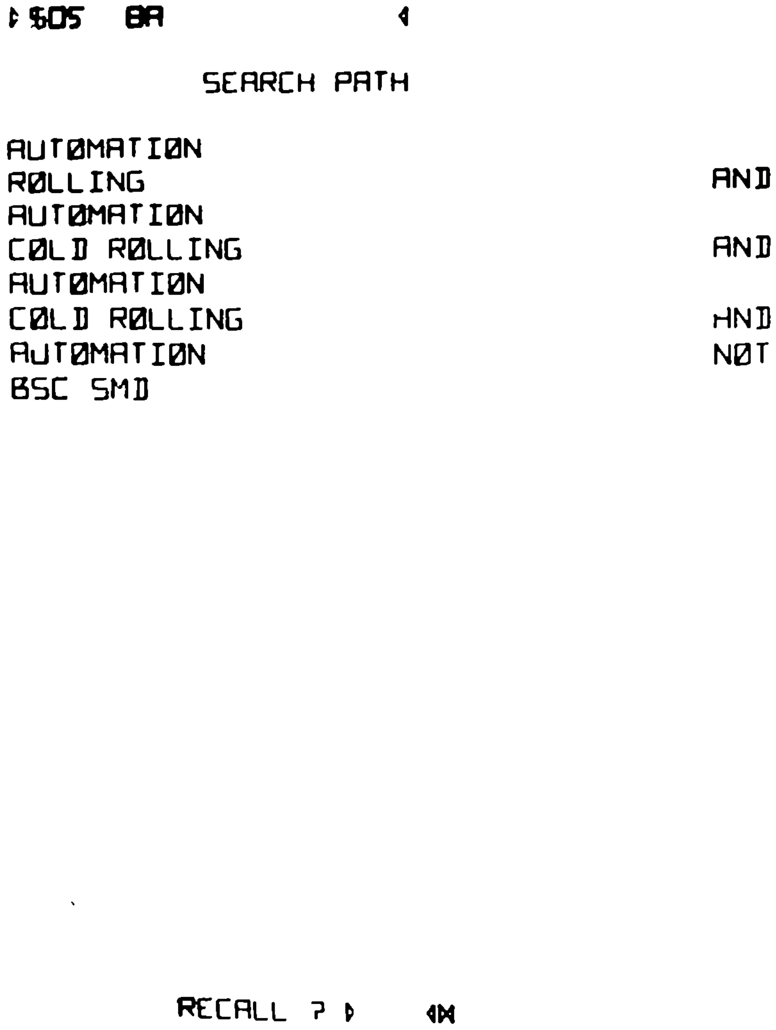
The following formats were created:

1. Introductory format offering assistance.
2. Explanation of mode of entry.

3. Structured Thesaurus format with flip-flop facility.
4. Search format.
5. Search path.

Programs were then written to link these formats and retrieve data from the stem dictionary, inverted file and main files as required and display the data in these formats.

A suite of programs employing Boolean logic for matching of SDI profiles with current data had already been written and part of this suite is used, with extract and print modifications, to search and match terms in the inverted file and display the results of the search in terms of number of records resulting from

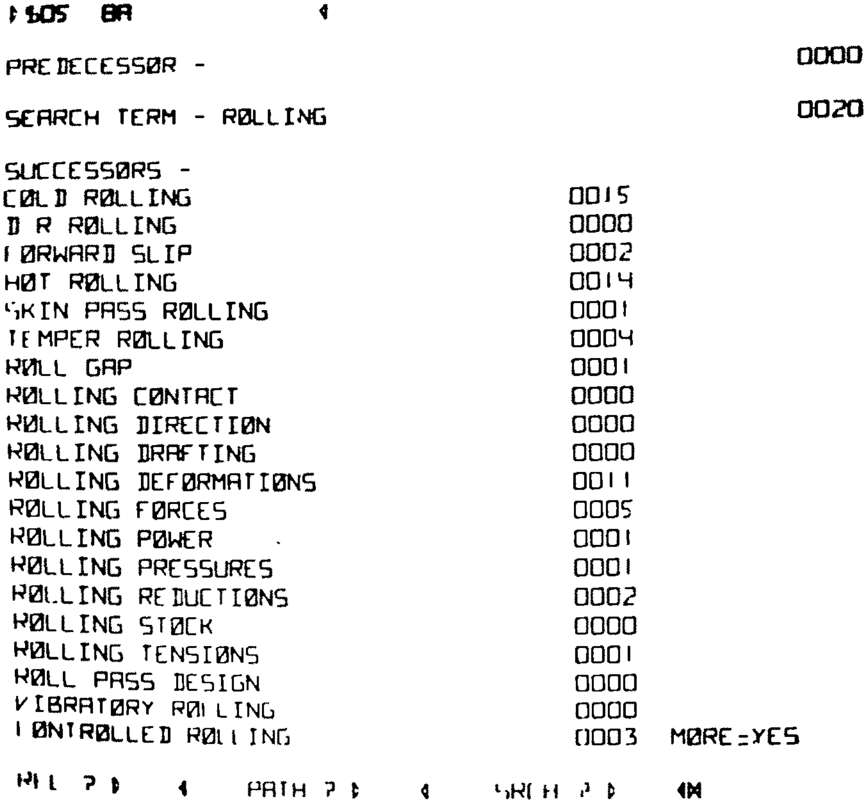


```
▸ $05   8A                    ◂

              SEARCH PATH

AUTOMATION
ROLLING                                        AND
AUTOMATION
COLD ROLLING                                   AND
AUTOMATION
COLD ROLLING                                   AND
AUTOMATION                                     NOT
BSC SMD








              RECALL ? ▸      ◂M
```

FIG. 7: *OVID search path format*

such search. The search terms and the logical operators used are added to a search path format (Figure 7) in order that the enquirer can refresh his memory on the search strategy. Straightforward AND, OR, NOT logical operators are used and there is no provision at the moment for searching on weighted terms.

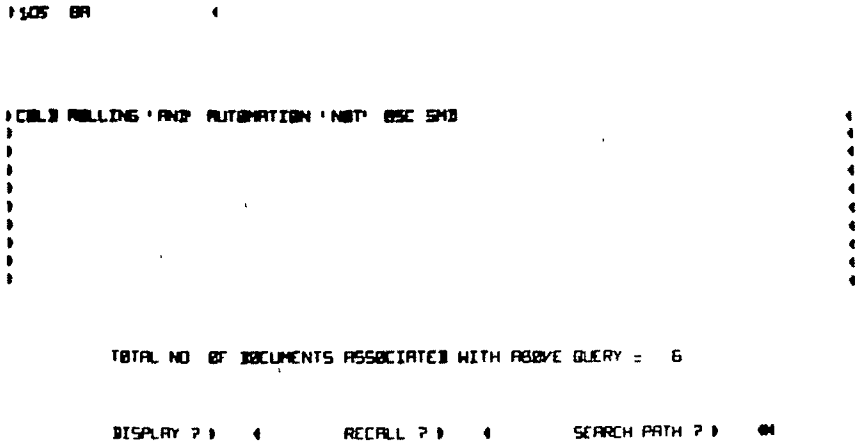
Searching the inverted file proceeds in the following manner: typing in a code displays an initial format which invites the enquirer to seek assistance in formulating his enquiry or allows those already familiar with the system to type in their first search term. This can be any term at any level from the Thesaurus. The search term is then displayed together with its immediate broader term, if there is one, and up to 20 terms at the next more specific level (Figure 8). MORE = YES on the screen indicates that there are more than 20 successors to the term requested and up to 20 further narrower terms can be displayed by entering YES in the Recall Field. The system allows one to 'flip-flop' between the two screens. Alongside each term is displayed the total number of documents stored under that term. Thus the enquirer can decide whether or not he



```
▶505  BR              ◀

PREDECESSOR -                                                   0000

SEARCH TERM - ROLLING                                           0020

SUCCESSORS -
COLD ROLLING                                  0015
D R ROLLING                                   0000
FORWARD SLIP                                  0002
HOT ROLLING                                   0014
SKIN PASS ROLLING                             0001
TEMPER ROLLING                                0004
ROLL GAP                                      0001
ROLLING CONTACT                               0000
ROLLING DIRECTION                             0000
ROLLING DRAFTING                              0000
ROLLING DEFORMATIONS                          0011
ROLLING FORCES                                0005
ROLLING POWER                                 0001
ROLLING PRESSURES                             0001
ROLLING REDUCTIONS                            0002
ROLLING STOCK                                 0000
ROLLING TENSIONS                              0001
ROLL PASS DESIGN                              0000
VIBRATORY ROLLING                             0000
CONTROLLED ROLLING                            0003   MORE=YES

 RCL ?▶   ◀    PATH ?▶    ◀    SRCH ?▶    ◀M
```

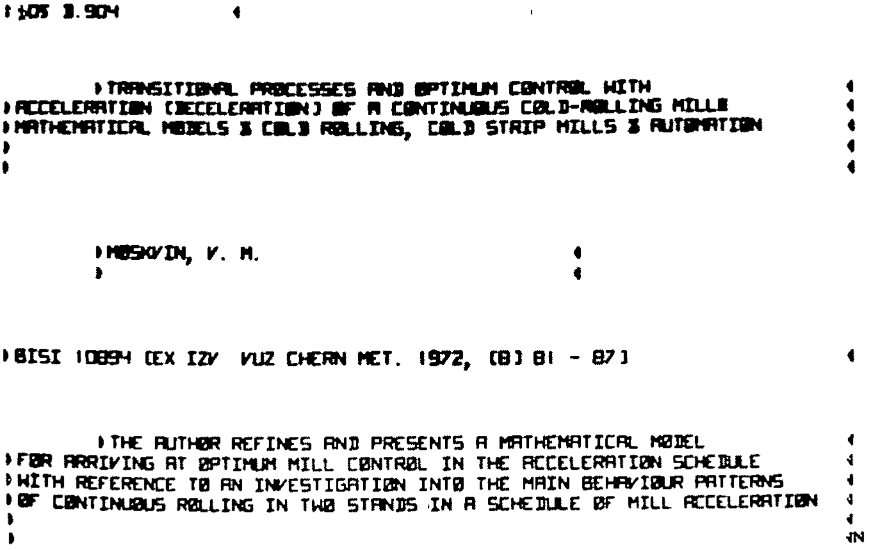
FIG. 8: *OVID inverted file display*

needs to search at a more specific level or whether he is going to find more specific information by searching under some other term. By transferring to a search format (Figure 9), the enquirer can enter his chosen main term together



```
▶$05 BA              ◀



▶COLD ROLLING 'AND' AUTOMATION 'NOT' ESC SMD                                 ◀
▶                                                                            ◀
▶                                                                            ◀
▶                                                                            ◀
▶                                                                            ◀
▶                                                                            ◀
▶                                                                            ◀
▶                                                                            ◀
▶                                                                            ◀
▶                                                                            ◀


        TOTAL NO  OF DOCUMENTS ASSOCIATED WITH ABOVE QUERY =   6


        DISPLAY ? ▶   ◀        RECALL ? ▶   ◀        SEARCH PATH ? ▶   ◀M
```

FIG. 9: *OVID search format*



```
▶$05 D.904           ◀


        ▶TRANSITIONAL PROCESSES AND OPTIMUM CONTROL WITH                      ◀
▶ACCELERATION (DECELERATION) OF A CONTINUOUS COLD-ROLLING MILLE               ◀
▶MATHEMATICAL MODELS D COLD ROLLING, COLD STRIP MILLS D AUTOMATION            ◀
▶                                                                             ◀
▶                                                                             ◀



        ▶MOSKVIN, V. M.                        ◀
        ▶                                      ◀



▶BISI 10894 (EX IZV  VUZ CHERN MET. 1972, (8) 81 - 87)                        ◀



        ▶THE AUTHOR REFINES AND PRESENTS A MATHEMATICAL MODEL                 ◀
▶FOR ARRIVING AT OPTIMUM MILL CONTROL IN THE ACCELERATION SCHEDULE            ◀
▶WITH REFERENCE TO AN INVESTIGATION INTO THE MAIN BEHAVIOUR PATTERNS          ◀
▶OF CONTINUOUS ROLLING IN TWO STANDS IN A SCHEDULE OF MILL ACCELERATION       ◀
▶                                                                             ◀
▶                                                                             ◀N
```

FIG. 10: *Technical record format*

with any other terms linked by logical operators. A total number of records resulting from the search is then reported on the screen and these can then be very quickly displayed one at a time (Figure 10). A Creed Envoy Dataprinter has been wired to the Sanders 622 VDU in order to obtain hard copy, and such a machine can be used as a teleprinter to transmit the results to satellite information units or any other remote enquirer. A typical three term search yielding twelve documents takes about 5 minutes from initial keying to display of the last record.

The 'TOTAL' concept has been extended to the indexing employed in that TIS is seeking to produce from one indexing operation meaningful KWOC indexes, precision and relevance in retrospective search from an inverted Thesaurus file and similar properties in SDI. The latter is worth discussing briefly before leaving the subject. Because TIS had chosen to institute a manual group SDI system it has been able to concentrate its mechanised activity in this area on profiling senior management and a few technological gatekeepers whose interests were outside the scope of group bulletins. This has shown that a high degree of posting-on terms is necessary if programs are to effectively retrieve what are frequently expressed as general interests of management. But this practice can result in a false impression of file content, besides being an impractical proposition from the computer storage point of view. A routine has been written which will extract stems of words (common stems had been conveniently used for more efficient storage) and match these. This, in a controlled-language environment, is likely to be more effective in terms of relevance than the well known use of stems in free-text searching.

Future developments

Because TIS is storing 1000 character records on-line it has not considered converting these to COM at this stage, although it may become necessary to do so in the future. More attention is being paid to linking large stores of microfiche or film to on-line retrieval, ideally with a view to displaying text on the same VDU or on another adjacent display.

Some points from experience at TIS

Programming languages and the variety and variations of these available do little but add to the confused state of the art. TIS chose to write all its programmes in ASSEMBLER and PL/1 and the suitability of this combination has been borne out by the work of Dolby[3] and others in the U.S. Experience with in-house programmers and analysts has proved the wisdom of following the mainstream of programming expertise available within the Division, for replacement programmers in PL/1 and ASSEMBLER have always been available and will continue to be available for system maintenance. To give some idea of the program suites used, a summary of these and their respective roles is included as an Appendix.

Similarly, the variety of VDUs available to one has reached frightening proportions. Standardisation seems as far away as ever with many VDUs being produced specifically as peripherals to particular mainframe suppliers' equipment. *Dataweek*[4] has a two-page spread on VDUs and remote batch terminals which is a useful checklist but is not very conclusive, and the probable ignorance of the customer combined with the possible arrogance of one's mainframe supplier will make the choice of a VDU even more difficult. Third generation programmable VDUs are now on the market and these allow one to input data off-line and transmit to one's computer store at the end of the day. Remote batch terminals or RJEs are another alternative open to those contemplating large amounts of input and batch processing. One would certainly come down against the outright purchase of equipment at this stage in its development where healthy competition is likely to leave the market clear for those with the most generally compatible equipment in the near future. Renting teletype compatible VDUs is to be recommended if editing software can be incorporated in one's teleprocessing support programs. Similarly, stand-alone VDUs with built-in control units or fully programmable VDUs should be considered for rental if one is planning the equivalent of on-line/off-line all-day input/interrogation and the amount of core available is likely to require heavy overlaying of programs. Mention should be made again of the video terminals, which are now appearing and which can fulfil a dual role in accommodating alphanumeric displays as well as video. Perhaps the biggest breakthrough will come in this area as the potential for such terminals can clearly be seen.

Another factor to consider is that of telecommunications. Hardwiring of terminals to computer installations presents no problems but attempts to operate over public speech lines at 600–1200 band have proved unsuccessful, due to an excessive number of line errors. If one runs at slower speeds this problem can be overcome, but the alternatives are to switch to a private wire circuit or the Post Office Datel 600 or 2400 service. Unless one is able to justify the expense of a leased line purely for data transmission (say £1200 p.a. for 100 miles) it is better to seek access on a private speech circuit perhaps already available within one's organisation. The other factor one has to consider here is modems. Over Post Office lines, one would normally rent from the Post Office. Linked through internal telephones or hard-wired to an in-house computer, one would consider outright purchase of modems at the equivalent of two years rental.

Staff acceptance of changes has been enthusiastic once the benefits have been realized. Certainly the 'TOTAL' concept has done much to minimise clerical effort on the part of professional staff and has opened their eyes to ways in which critical examination combined with systems analysis has improved essential information flow in a large network. Clerical staff have gained considerable job satisfaction from operating with VDUs, have adapted easily to the use of these and, at the same time, have raised efficiency levels. There may be some significance in the fact that the same number of clerical staff is now handling 50% more throughput than it was four years ago. All typing staff, incidentally, have an equal opportunity to share in the work-load associated with VDUs and paper tape-typewriters and the establishment of rotas, job scheduling and the acceptance of common job descriptions has all been made easier by the involvement of all grades of staff in mechanised systems.

Conclusions

Some aspects have been treated rather sketchily during this paper, primarily because they could have well been discussed at length in their own right. The principle aim has been to paint a broad picture of the experiences of one organisation in developing a mechanised information system framework. This is, by necessity, a low-priority usage operating at the lower end of a works computer with some necessary limitations, but by and large a working system which is meeting its initial specification. Much can be done to improve and enlarge the system and make it more sophisticated, and work in areas such as refinement of the OVID retrospective search system, multi data-base extract/merge, preparation of a dictionary of synonyms and microfiche-linked retrieval is going on at this moment.

Acknowledgement

The author wishes to thank the Technical Director, B.S.C. Strip Mills Division for permission to publish this paper.

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3 DOLBY, J. L. Programming languages in mechanized documentation. *J. Docum.* **27** (2), 1971, p. 136–155.

4 *Dataweek* **24** (9), March 13th 1974.

FURTHER READING

PATTEN, M. N. Storage and retrieval of information using VDU's on-line. *1st. European Congress on Documentation Systems and Networks*, Luxembourg, 1973.

APPENDIX

Programs

Input

XZQ3BULS is the deck used to input bulletin paper tapes
XZQCLOAD is the deck used to input direct to inverted file using cards
XZQLIM with XZQLOAD loads inverted file from on-line file

Maintenance

XZQDLT deletes Keyword entries from inverted file using cards
XZQCTHES adds Keyword entries direct to inverted file using cards
XZQTHES adds Keyword entries direct to inverted file using tape
XZQCAMD amends Keyword entries (replace+include) direct to inverted file using cards

Output

XZQLIM/XZQLOAD automatically gives SDI printout
XZQPNT gives a blank copy of the thesaurus
XZQD0030 gives a single section KWOC
XZQ3KEYS with XZQ3KWOC gives KWOC to specified limits

Library Print programs (ZZP3 records)

XZPSEQ	Program ZZPD0011 extracts ZZP3 records lying between specified computer numbers, * removes all control characters and writes the records onto TPE833. This data is then used as input to the other jobs.
XZPCHK	Check listing of ZZP3 records. Data from TPE833 is sorted into computer number order onto WORK pack and is then printed by program ZZPD0012.

XZPUDC	UDC catalogue. Data from TPE833 sorted into UDC sequence onto WORK pack and is then printed by program ZZPD0012.
XZPAUT	Author/series catalogue. Program ZZPD23 extracts authors and/or series from data on TPE833, this is then sorted into author/series order on the WORK pack and printed by program ZZPD24
XZPKWOC	Keyword index. Program GPCREATE creates a direct access data set on the work pack, GPLOAD loads this data set with the data on TPE833. Program ZZPD0031 extracts keywords from the records on TPE833 and writes them, with computer numbers, onto data set which is sorted into keyword sequence. Program ZZPD0032 carries out a word count on the keywords and program ZZPD0033 prints title and UDC information for each keyword, after first checking it against the supplied 'stop list' * Low and high values for computer numbers are specified in the 'parm' field of the EXEC card i.e. // EXEC PGM = ZZPD0011, PARM = (lllll, hhhhh)

Subject Index (ZZP4 records)

XZPSUB	Program ZZPD0043 extracts all ZZP4 records from the on-line file, these are then sorted (using the work pack) and program ZZPD0044 produces a double column print of those records lying between specified limits. The printing of the computer number here is optional, and like the limits is controlled by the PARM field of the EXEC statement for ZZPD0044 e.g. // EXEC PGM = ZZPD0044, PARM = (lllll, hhhhh, PRINT) will not print computer numbers, any word other than PRINT will cause computer numbers to be printed.

Commercial Bulletins (ZZR2 records)

XZRBULLS	Program ZZRD0006 reads the paper tape data set created by ZSPOOL, formats the data into the ZZR2 format and adds the records to the on-line file.
XZRKWOC	Program ZZRD0001 extracts ZZR2 records lying between specified limits*, the keywords from these records are extracted by program ZZRD0005 and the data required for the KWOC is then sorted into alphabetical keyword order (using the work pack) and printed by program ZZRD0007 * Low and high values for limits are specified in the PARM field of the EXEC card for this program e.g. // EXEC PGM = ZZRD0001, PARM = (lllll, hhhhh)

Thesaurus and Stem Dictionary programs

XZQTHES	Program ZZQD0040 extracts terms and levels from paper tape and the terms are added to the stem dictionary by program ZZQD0042 and using the stem numbers so obtained the terms are added to the thesaurus by program ZZQD-0061 (N.B. This job should only be used for adding 01 terms and associated successors, or 06 terms, other terms should be added by job ZZQAMD)
XZQAMD	Program ZZQD0043 amends the thesaurus and stem dictionary either by including new terms as successors to existing terms or replacing an old term by a new term; the data for this is punched on cards as follows:

Inclusion—cols 1– 3 INC
cols 5– 6 level
cols 8–42 term
cols 45–79 predecessor

Replace—cols 1– 3 REP
cols 5–39 existing term
cols 41–42 BY
cols 44–78 new term

XZQDLT Program ZZQD0075 deletes a term and all its successors from the thesaurus and stem dictionary. The term to be deleted is punched in cols 1–35 of a card.

XZQPNT Program ZZQD0064 extracts records from the thesaurus which are then sorted into alphabetical order (using the work pack) and printed, together with their predecessors and successors, by program ZZQD0063

XZQCTHES As an alternative to paper tape input for including 'complete' terms i.e. 01 terms and successors, or 06 terms, program ZZQD0042 will accept card input in the form:

cols 1– 2 level
col 3 blank
cols 4–38 term

In this case the cards must be sequenced in columns 77–80
Use numbers 0001, 0002, 0003 etc., in order to maintain deck order (e.g. 01 term, 02 term, 03 terms 02 term 03 term etc.

XZQLIM Program ZZQD0050 sets up extraction limits for ZZQD0051, if all the documents present on the previous run of XZQTHES has been keyworded this job need not be run, otherwise for each section the key coded should be 1 less than the first document to be extracted. The format of the data is as follows:

cols 1– 5 ZZR2, ZZQT, ZZQ31, or ZZQ32
cols 10–15 (ZZR2, ZZQT) ZZR2 or ZZQT limits
cols 10–61 (XXQ31) limits for sections AM
(ZZQ32) limits for sections N–Z (4 columns each)

Technical Bulletins (ZZQ3 records)

XZQ3BULS Program ZZQD0035 reads the paper tape data set created by ZSPOOL, formats the data into the ZZQ3 format and adds the records to the on-line file.

XZQ3KWOC Program ZZQD0039 extracts ZZQ3 bulletins with keys for each section greater than those present the last time this program was run. (These initial values can be reset using job XZQDKEYS which executes program ZZQD0037). The keywords are then extracted by program ZZQD0032, blanks closed up by program ZZQD0034, the data is sorted using the work pack and printed by program ZZQD0033.

XZQDKEYS Program ZZQD0037 reads cards containing lower limits for each section of the bulletin and writes them onto disc. The format of the cards is:

cols 1– 4 ZZQ3
col 5 1 for each section A to M
2 for section N to Z
cols 10–61 a 4 character lower limit for each section
(if required this job should be run before XZQ3KWOC)

Loading documents onto Thesaurus and SDI file

XZQLOAD Program ZZQD0051 extracts bulletins added to the on-line file since the last time this job was run, the keywords are extracted by program ZZQD0052 and the keyword and document number data is sorted into keyword order. Program GPCREATE creates a temporary inverted file for SDI and the keywords and document numbers are loaded onto this by ZZQD0053, program ZZQD0074 loads the document numbers onto the Thesaurus and tests any keywords not present on the Thesaurus. Program ZZQD0054 extracts profiles from the on-line file, ZZQD0055 matches profiles and document numbers and ZZQD0056 prints documents matching profiles on half-width paper.

XZQCLOAD As an alternative to using the above process for adding documents to the thesaurus program ZZQD0074 can accept card input, the format of the card is

col 1–35 keyword
col 36 c for commercial bulletins
d for technical bulletins
t for technical bulletins
col 37–41 document number

All cards relating to one keyword should be grouped together for speed of execution.

XZQD0030 As XZQ3KWOC except that program ZZQD0031 extracts data lying between specified limits (This job would normally be used for a KWOC on a single section of ZZQ3 data). The limit are specified as follows:

//STEP1 EXEC PGM = ZZQD0031, PARM = 'llllll, hhhhhh'. In most sections of the bulletin keys are only 5 characters long, here the last character of each limit would be a blank.

DISCUSSION

MR R. J. MOORE (Unilever Research): 'Bearing in mind that there are some advantages in having the input operation off-line, what were the main factors in your choice of VDU as the input process? Are there any problems of operator fatigue?'

MR PATTEN: 'True there are advantages in having the input operation off-line and this is why I am now considering the use of VDU with tape cassette attachments which would not tie up the use of a partition all day. The main advantage in using terminals off-line lies with remote terminals where telecommunication costs may be involved. However, the main factors determining my choice of VDU in 1970 were compatibility with IBM equipment, maintenance, prices and built-in editorial facilities (e.g. addressable cursor) which eliminated the need to write additional software. The latter could be obtained now by writing editorial requirements into the teleprocessing software—but this did not exist in 1970 as the only multi-access at that time was through terminal clusters around large control units. Yes, there was operator fatigue with the early VDU's primarily because of the glare on the screen. This has been largely overcome in the later models with the introduction of matt screens. It should be realised, however, that no typist is normally using a VDU for more than 2–3 hours at a time because of the rota system in operation and no instances of operator fatigue have been reported to me in the last two years.'

MR R. E. COWARD (British Library): 'What is the viability of distant VDU's over public lines?'

MR PATTEN: 'The Post Office offers a number of data transmission services to terminal users ranging from 110 bits per second to 2400 bits per second. My own experience has been that normal PSTN (Public Switched Telephone Network) lines are not reliable above teleprinter speeds for all day usage but that private speech circuits are satisfactory at speeds of 600–1200. If one is fortunate enough to have all one's terminals within a private wire network there is no real problem. The trouble arises when terminals at remote locations have to dial-up on PSTN and here one's success will largely depend on whether one is lucky enough to get a good line.'

MR I. M. PALMER (Shell International Petroleum Co. Ltd.): 'What are the computer costs for the system and have you been able to demonstrate the cost effectiveness of the system?'

MR PATTEN: 'I have not deliberately chosen to exclude costs in my talk but what I am about to say will probably cause some heads to shake. Total programming costs in terms of man hours charged to me by our Systems Development Department and including computer time for programme testing in the period September 1969 to September 1973 amounted to

£10,000. When the research project was initiated it was calculated that it would cost £25,000 including all equipment purchases and the time of professional and clerical information staff. This figure could be reduced by £10,000 because our own staff would have been paid anyway but increases in manning have been avoided despite a 50% increase in throughput. The difference in purchase and rental of equipment over a four-year period would be small and can be discounted. Costs of running the partition of 120K *slow* core (which incidentally is shared with others) and running batch operations such as the printed indexes and a small amount of SDI is now costing £4000 a year. This figure has been achieved by attacking the accounting system used on the in-house computer and persuading management to make realistic charges. CPU usage is very small on most jobs because of the relatively efficient way in which programs have been written around existing in-house routines. I believe that too many information workers accept computer charges which are thrust upon them as a fact of life and in many cases have not taken sufficient trouble to critically evaluate their systems' needs and work within minimum configurations. Our 360/50 has a million bytes of slow core which is not popular with other users but is ideal for TP work. Rental of 90K fast core partition is £23 an hour, whereas rental of a similar partition in slow core is only a quarter of this. Most input and edit work could be done in a 10K slow core partition.

I have only been able to demonstrate the cost effectiveness of the system in terms of savings on manpower and increased efficiency resulting from this. Sheer lack of time and resources to devote effort to analytical exercises are the main reasons although brief costing exercises on bulletin and catalogue production and cost comparisons of manual and machine subject searches have been carried out and it is my intention to publish these in the near future.'

MR D. HOLTUM (Morgan Guaranty Trust Co.): 'What are the machine requirements, i.e. is implementation OS or DOS? What is the on-line file structure?

MR PATTEN: 'Our 360/50 uses OS but our software could be modified to operate under DOS. SPREAD operates directly under OS as the TP system. It does not have the sophistication of CICS but it does not require fast core storage and is capable in its present form of supporting up to 24 terminals. Figure D1 shows the file structure for the inverted file with levels indicated by a 2 digit number, 35 character term field, 3 digit number specifying total number of records contained within the record, 6 digit stem dictionary number, 30 digit number indicating total number of document access numbers, 1 character field indicating document source and a 5 character access number for each document.'

MR R. A. COWAN (Post Office Research Dept.): 'When do you envisage using some medium other than disk?'

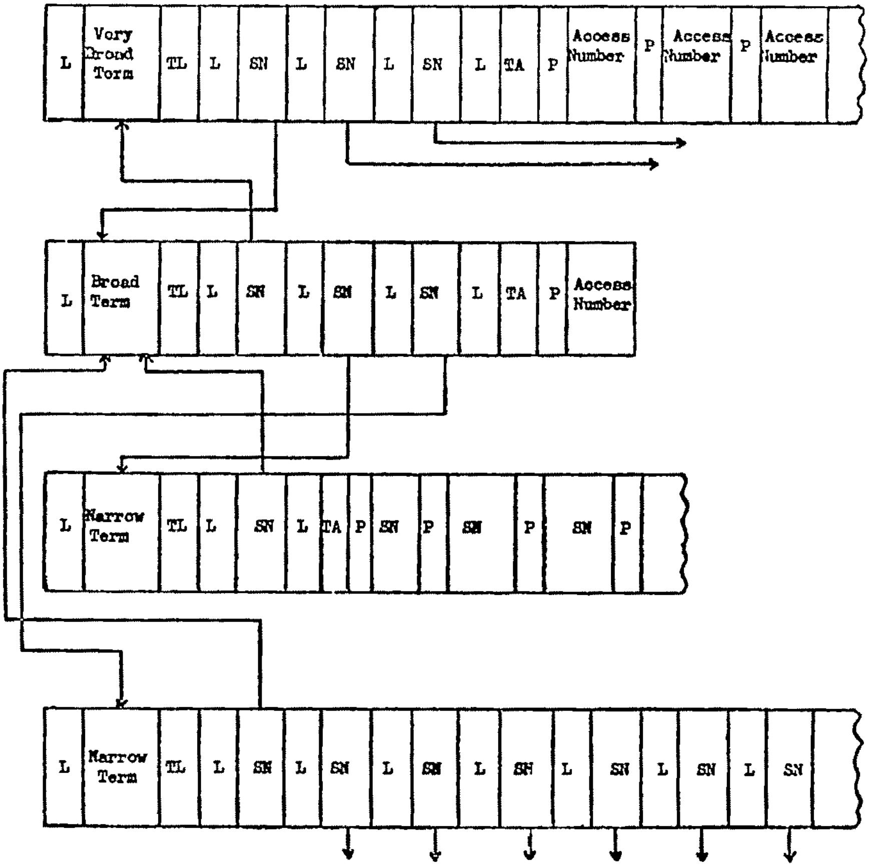
MR PATTEN: 'I have already filled one 2314 disk pack and have dumped all early library data to tape as this can easily be brought up on disk for batch printing operations. New developments in disk and drum storage will offer much more space to us but I am not sure on the long term that this is the answer—particularly if one envisages tying up more than one disk drive on a works computer! Eventually one has to trim files manually or mechanically and it is for this reason that I am now looking at COM and microfiche-linked retrieval. Storage is bound to be expensive for some time to come and I feel that we should learn to store the minimum data required to do the job in hand.'

MISS D. HERMAN (Institute for the Study of Drug Dependence): 'Have you evaluated the efficiency of the retrospective search system in terms of recall and precision? What is the accession rate?'

MR PATTEN: 'To answer the easier part of your question first, the accession rate is approx. 10,000 items a year. In terms of recall and precision, the only measurements we have been able to make have been comparative ones in the sense that we carried out short enquiries by using a broad subject card index of abstracts, a KWOC index and retrospective on-line searching for the same period. What this has done is highlight the difficulties of 'TOTAL' indexing but it has enabled us to draw up a minimal set of rules and increase our indexing efficiency. OVID was at least equivalent to KWOC index searches in terms of both recall and precision and was superior in that obviously man effort and look-up time was considerably less. Again, I hope to produce some definite results in this area in the not too distant future.'

MR S. PALFFY (SCICON): 'Why bother to type in complete search terms on the VDU, rather than numbering the terms on the screen and simply indicating which term number is required?'

MR PATTEN: 'You are quite right in pointing out that we could have thought of identifying each term with a short number when part of the structured file is displayed on the screen and one could write a sub-routine which would temporarily store that number so that it could be accessed and linked back to the inverted file when one moved to the search format. Whilst this would save typing effort for the first term entered in the search format, what would happen with the rest of the terms one would be entering? One would need to call up all terms in advance and store (and memorise) all the temporary numbers assigned to them. In practice,



where L = level
TL = Total number of levels within the record
SN = Stem Dictionary number
TA = Total number of access numbers within the record
P = Prefix

FIG. D1: *File structure for inverted file*

searches are conducted by displaying the structure around one's chosen main term and then by refining this in the search format by the addition of other terms or facets chosen from the structured or alphabetical printed forms of the thesaurus. One could of course assign unique 4 digit numbers to all the terms in the printed thesaurus and merely input these. I am not sure however, that this would be very meaningful and the mistyping of a number could produce peculiar results. Whilst scientists use numerals in a more meaningful manner than most of us, they still have not got around to writing their reports by numbers!'

Letter to the Editor

Sir,

I work in an open access library which provides a service for scientists in the university. The book stock is arranged by subject according to a scheme based on the U.D.C. Records are created locally using graduate librarians, typists, and xerography.

There is a degree of change in the bookstock as a result of deliberate library policy and reader action. The technical terms used in the library's subject index are now largely based on the terms used by teaching departments to describe courses given.

The books are arranged on the shelves in an apparently linear sequence according to the U.D.C. number attached to the book. The books are members of a class or classes having common subject description/s. The rate of change of subject descriptions, the development of new subjects, and the discovery of new relationships between established subject areas, are faster than the rate of removal of obsolescent books. The rate of revision of the relevant sections of U.D.C. is slow, amendments appearing in "Extensions and Corrections" are often inconveniently in German and not indexed, and in any case if a major revision e.g. of the maths schedules should appear, this library lacks the manpower to effect a radical reorganisation of a section of the bookstock.

We are therefore experiencing some difficulty in applying the principle of subject arrangement in the library, given:

1. a bookstock including both older, useful material and new items with a completely fresh approach to the same subject.
2. a classification scheme which cannot accommodate this new approach but which can be meaningfully applied only to the older material.

If anyone is experiencing the same dilemma, and intends to think about and tackle this problem with the intention of producing a working solution then I shall be glad to hear from them.

Yours faithfully,
W. B. WOODWARD,
Keeper of Science Books, Durham University

BRIEF REVIEWS

HELPIS: Higher Education Learning Programmes Information Service. *Catalogue of some audio-visual materials made by institutions of higher and further education.* 3rd edition. NCET, 1973. 100 pp. £1.65. (SBN 0 902204 32 7.)

The catalogue is a listing of teaching and learning materials produced in higher and further education establishments in the United Kingdom primarily for their own use but which may be of value to others outside the establishments. Media covered are videotapes, films, slides, audiotapes and other materials but not all are audio-visual.

The items are classified according to the 18th edition of Dewey, with a format similar to that of the *British National Bibliography*. Indexes are provided for title, name and subject. Other useful inclusions are the full address to write to for availability of the items, list of television formats, and a listing of other catalogues of materials suitable for use in higher and further education.

Each entry comprises title of the item, name of institution responsible for production, place and date produced, department where the item is held, physical description, summary of contents, medium of recording and entry serial number. An indication is given of the level or type of audience for whom the materials are intended. Where entries have been repeated from 1st and 2nd editions of the catalogue, the serial numbers then allocated have been retained.

This catalogue is a useful guide to the availability of audio-visual materials prepared by educational institutions.

LUTYENS, C. R. *and others,* Community law: a selection of publications on the law of the European Economic Community and the relevant law of the original member states. B.I.A.L.L., 1973. £2.25. (ISBN 0 9502081 1 6)

This bibliography was based initially on selection lists compiled by the author when establishing the Inn's of Court European Communities collection. The Committee decided that the bibliography should be limited to the law of the European Economic Community and the six original member states and should be aimed at the academic and practising lawyer rather than the law student. It was to be in the nature of a purchasing list rather than a comprehensive research tool. The bibliography was compiled between November 1972 and July 1973.

Following the sections for member countries, within which the bibliography is arranged by jurisdiction, there is a section on laws relating to Human Rights in the EEC, as the compiler feels that this is of relevance to the EEC law. There is a general section containing details of publications relating to more than one jurisdiction and some international and comparative law publications. There is also an appendix containing the names and addresses of publishers and booksellers mentioned in the bibliography and indexes for author, title and subject.

This should prove a useful quick guide for librarians and practising lawyers of the law of the EEC and of the original member states.

ENGINEERING INDUSTRIES REVIEW 1973–1974. Gower, 1973. 302 pp. £15.00. (ISBN 0 7161 0141 6)

Gower Press have extended their series of economic publications to include for the first time a survey of the British mechanical and electrical engineering industries, which jointly account for approximately one fifth of the total manufacturing output of this country. Coverage falls into three main divisions. The first part provides an overall view of the two industries while the second part is a more detailed review of the constituent sections: agricultural machinery; construction and earth moving equipment; industrial plant and steelwork; machine tools, materials handling; office and textile machinery; electrical engineering (industrial) and domestic appliances; electronic engineering. The final part, comprising approximately half the publication, lists the two hundred British engineering companies by turnover and provides more detailed information on the one hundred top companies, alphabetically by company. The full registered name of the company, registered office, principal activities, directorate, trading performance, names of subsidiaries together with a review of recent activities, are all included where relevant.

In the Foreword E. J. Robertson, the Director (Industrial Relations) of the Confederation of British Industry, welcomes this review of a previously poorly documented area. Certainly the publication collates a large amount of publicly available, but not readily accessible, data in a handy volume. Extensive use is made of graphical, diagrammatic and tabular presentation of statistics, enabling the reader to readily grasp overall trends, proportions of the market etc. Sources of the data contained in the first two sections are given. It is perhaps a little disappointing that although the detailed company information gives 1972 trade figures, almost without exception the industry data, taken predominantly from the latest official Government statistics, are 1971 in origin. Nevertheless this publication provides a clear picture of overall trends in both industry sections and companies.

HENDERSON, G. P. *and* HENDERSON, S. P. A. *eds.*, Directory of British Associations and associations in Ireland. 4th ed. 1974–5. Beckenham, Kent, CBD Research, 1974. 397 p. £10.50. (SBN: 900246 15 4)

The increase in the number of entries in this new edition of an invaluable reference tool is not this time entirely due to increasing numbers of associations. Brief details of selected organisations in the Republic of Ireland have been included, where these are not obviously Irish, or where the association has many members or branches in Great Britain. Interested users are directed to the fuller entries in the Institute of Public Administration's *Administrative Yearbook and Diary*, whence the DBA entries are culled, with the consent of the Institute in Dublin. An even more useful improvement on the last edition is more detailed information on the effort expended in chasing organisations which didn't reply promptly, if at all, to the updating questionnaires; the editors hope this will give users some indication of the kind of response to be expected to enquiries to those organisations.

The format and arrangement of entries are the same as in earlier editions, but the publications index has been omitted, presumably following consultations with users. This index has proved useful in the past for tracing the issuing bodies of non-serial publications; but since such publications from associations are often in the form of directories or handbooks, most are traceable in the companion volume *Current British Directories*.

Amendments and inclusions received after press date have been printed on separate sheets, instead of printed on the last page of the director. However, the publishers have lessened the utility of this aid to easy amendment by using both sides of the amendment sheets. The user is left to amend the subject index in his own manner.

The regularity of new editions, and the useful telephone backup service, help to make this directory the most current and complete of its kind.

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Instant and accurate: organization of the BBC's information flow

R. D. Hewlett

Head of Reference and Registry
Services, BBC

Paper presented at an Aslib evening meeting, 15th May 1974

ON THIS Wednesday evening it will come as no surprise to you when I say that the BBC is on the air. Indeed, it would come as something of a shock, if I were to tell you that it is not! You will immediately think of BBC-1 where Magic Roundabout is about to cast its spell. Or Radio 4 where William Hardcastle is bringing listeners PM Reports; or Choral Evensong on Radio 3; or contrasting music on Radios 1 and 2. And then there's BBC Local Radio—in London with a programme about Local Government. But many of you, perhaps, would not immediately think of the BBC's External Services, nearly all of which are broadcast on short wave, the BBC World Service broadcasting in English for 24 hours a day and further services in 39 foreign languages on the air at different times of day and night. At this moment, for example, programmes are being broadcast from London in Maltese, Finnish, Roumanian, Persian, Arabic and German, while various World Service transmitters are carrying two separate programmes: a regional service for Africa and the mainstream for the rest of the world.

Now I won't worry you with a lot of figures; but it's worth saying that the BBC, on all its services taken together, is on the air for some 2,780 hours every week. Programmes produced in London alone—whether Playschool for the Under-5's on BBC-2, or Mwangaza wa Elimu in Swahili for the Swahili Service or the World at One on Radio 4—these London-produced programmes account for 179 hours of output every single day of the year. It would be silly to say that output on such a scale as this is not impressive. But my purpose in making the point is not to impress you, but rather to emphasize the scale of the BBC's output in the context of the library and information needs of the programme makers—and they create an extremely diverse range of programmes.

Most industries have a product or range of products which is tangible. They take a raw material—steel or crude oil or food—and process it in some way, thereby changing it into a product which is marketed. The information needs of such industries are usually highly specialized and perhaps highly complex; they might well call for librarians who are not only qualified as professionals but also experts, or at least well versed in, the special nature of the product. Nevertheless it remains true that in such industries, libraries and information resources are secondary features, not an essential part of the mainstream. In the broadcasting industry, however, and indeed in the press, the position is different. Our product is, itself, information. The raw material of every programme is, in some sense, information, whether it takes the form of a musical score, a television documentary or a compilation of gramophone records; even more is that the case with news bulletins or any programmes based on what the BBC used to call the 'spoken word'. It is the producer's task to select his information as his raw material, to process it, to mould it, and to create programmes. Clearly by no means all this information, not even the majority of it, already exists in broadcasting libraries, neatly classified and catalogued and indeed all ready for him to use. All news bulletins are, by definition, new. Programmes may be centred on a script commissioned from an established writer not on the staff; others take the form of interviews or discussions; yet others may be ready-made packages such as full-length feature films made for the cinema or concerts before an audience in a public concert hall. But in almost every case, library-type information of some kind is also needed. The announcer who introduces a concert to a radio audience will need to verify the date when a piece of music was first performed or the biographical details of the composer. The chairman of a discussion has to brief himself as fully as he can on all aspects of a subject to be discussed. Information in the widest sense is thus the very life-blood of broadcasting. And libraries of every kind are, as it were, its arteries.

To meet this demand, there are no less than 14 different library systems in the BBC; and that total does not take into account the libraries, many of them substantial, in BBC centres outside London, or even the small highly-specialized collections of information held locally in London departments. Most of the language services, for example, have collections of newspapers and periodicals in the languages in which they broadcast, but such collections are clearly of limited value for general use. It is not everyone who can benefit from reading *Pravda* in the original. The main library systems, however, are of three broad categories—audio, visual, and printed matter. None of the audio or visual libraries is within my own department, so it would not be right for me to discuss their operations tonight, beyond saying that each could well be the subject of further lectures. The BBC's Gramophone Library and its Film Library, for example, are both, I believe, the biggest of their kind in the entire world.

It is on the third category—what I have called the printed matter library systems—that I am going to concentrate. There are in total five such systems: The Reference Library Service, the News Information Service, the Pronunciation Unit, the Registry Service and the Written Archives Centre. Taken together, they comprise the BBC's Reference and Registry Services. The Registry and Archive side of the Department are less directly concerned with programme-making, and I shall not be talking of them tonight. The other three are available to anyone in the BBC, whether television, radio or external services, who has a legitimate need for what they offer. And what is it that they do offer?

Put at its highest, the Reference Library Service exists to ensure that by whatever means, and from whatever source, the BBC's needs for accurate and secondary information in any language are met in time for programme deadlines. I say 'secondary information' to make clear that the Reference Library does not of course provide material directly for broadcasting. What it does make available is either raw material that might be worked up into a script or detailed information to supplement one. Let me give some examples. I have already said that the External Services broadcast in 39 languages. Each service needs to see at least one and usually more of the newspapers published in the country to which they are broadcasting. And if the programme-makers are to keep properly in touch with their audiences, they need to see these newspapers promptly and regularly. Their supply is arranged through the Reference Library Service. There is normally no problem with *Le Monde*, *Figaro*, or the *Frankfurter Allgemeine*. Or with *Pravda* or *Al Achram*. But very occasionally—and I am glad to day that it really is very occasionally—we have to admit defeat. The Latin American Service, for example, wanted a Brazilian periodical called *Veja*. We tried every potential supplier in this country known to us without success. We asked one of our correspondents in Brazil, who actually paid a subscription, but still nothing came. And finally a member of the Latin American Service, on a duty visit to Brazil, tried to make arrangements direct. But still nothing has come.

On more traditional library lines is the supply of books to producers at the stage when they are first beginning to work on a programme. Or even earlier. The producer of 'A Book at Bedtime' has to read a great many novels before deciding on one suitable for adapting to radio. With the major television series particularly, the number of books needed by the producers is enormous. Let us take 'The Pallisers' as an example. Quite apart from the works of Trollope, which of course present no problems to anyone, the producer and directors need to read extensively the literature of the period, so as to become thoroughly familiar with the manners, attitudes and customs of all levels of society represented; while the designers need the same kind of books but if possible with lavish illustrations. What did the interior of a Scottish castle look like in the mid-nineteenth century? How would the safe used for Lady Eustace's diamonds be made? What would be on the dining table at one of Lady Glencora's political dinner parties? Or how would the guests at one of her receptions comport themselves? By adding the visual element to Trollope's story, the answers to these and countless similar questions become vital if the serial is to have any verisimilitude. And the answers cannot be found in the works of Trollope himself but only by exhaustive searches in contemporary literature, going far beyond the *Illustrated London News*. This kind of enquiry forms much of the work done by the Reference Library. Which authors of Polish farces or comedies could have been rehearsed in Colditz by Polish prisoners? What was on at Covent Garden in the 1870s for James Onedin to escort a lady to see?

Of course by no means all the enquiries are in connection with fictional programmes. We were asked for a copy of a report called 'Racism and the Mass Media' briefly mentioned in the *Evening Standard*. Your people, Mr Chairman (Mr John King, Chief Librarian, Beaverbrook Press), had no further details, except that it was by someone at Leicester University. It turned out to be the title of a forthcoming book based on an unpublished report under a different title presented to the Social Science Research Council by the Leicester University Mass Communication Research Centre.

I suppose the most unusual reference work undertaken in the Library is that for the BBC's Monitoring Service. I should perhaps explain, for the benefit of those of you not familiar with the Monitoring Service, that it was set up just before the war to monitor the broadcasts of other European countries. From that small beginning, the Monitoring Service now monitors, in conjunction with a similar American agency, the broadcasts of 120 countries in 33 languages throughout the world, concentrating on those countries from which it is difficult to get information regularly from alternative sources. Having monitored the broadcasts, the Service produces a daily Summary of World Broadcasts in four parts, covering the USSR, Eastern Europe, the Far East and the Middle East and Africa. Even with the best possible receivers and highly-trained monitoring staff, there are inevitably instances where reception is not clear or where the information being given appears misleading. Not long ago the Reference Library was asked to check a Zionist organization UZI involved in the elections on the West Bank of Jordan. There was no trace of any such organization that could be found, so the news bulletin broadcast by Cairo radio in which the reference occurred was looked up to see if there were any clues. There was one sentence: 'Elections are taking place under the threat of Uzi guns'. This led the library staff to the *Israeli Government Year Book* and a section of it, 'Military Industry'. This included a description of the Israeli machine-gun, trade mark UZZI, as being well-known all over the world. On another occasion the Reference Library was asked to check the name of an English peer. Among particularly bad atmospherics and fading, one monitor thought he distinguished the name Lord Setung. A colleague of his heard Lord Seychelles. Both were quite unknown. The only clue was that he was connected with development in the EEC. The name was traced as that of a Frenchman, Claude Cheysson, member of the Commission in charge of Co-operation and Development.

In organizational terms, the Reference Library Service is divided into five units. There is the Central Reference Library, which also acts as the main servicing point for Radio, the Television Reference Library at the Television Centre, the External Services Reference Library at Bush House, the Monitoring Service Reference Library at Caversham, Reading, and the Engineering Research Reference Library at Kingswood Warren. It is basically, although not completely, a unified service. In the system there are some 140,000 books as well as substantial collections of periodicals, maps, microfilms, illustrations and BBC publications. The stock covers every topic likely to be of recurring interest to the BBC and there are six specialized sections: broadcasting, music (but not scores: they are handled in a quite separate Music Library), plays, both stage and film, Stationery Office publications, illustrations and at the Monitoring Service Reference Library extensive analytical indexes of foreign people and events. The book and periodical stock of the music and drama sections is supplemented by carefully designed indexes. In addition, the entire stock of the Engineering Research Library is to be counted as a specialist one.

All libraries in the system act as information bureaux and research points for almost any kind of enquiry. They answer well over 100,000 enquiries a year, and I have already given some examples. Because of the nature of broadcasting all enquiries have to be answered quickly—more or less instantly, if possible, in the current affairs areas—and correctly. The information supplied may be used without verification, and often is, in a broadcast or as part of a statement by the BBC. It is almost axiomatic that among the audience for any programme of any kind there will always be some who are expert in the subject. There is little that is more irritating to a viewer or listener or more damaging to the BBC's own reputation than for our programmes to be inaccurate. In addition to this enquiry work, the system also lends books and periodicals, some 90,000 a year, to users within the BBC. Most of these come from library stock but something approaching 10,000 a year need to be borrowed from outside libraries. We are very conscious of the willing and understanding help we get from other librarians, both public and special, and I should like to take this opportunity of expressing the BBC's thanks to the librarians concerned.

In your introduction, Mr Chairman, you commented on the fact that I was a producer before I took my present job, and that I am not a librarian. I think I should add for the record that the man in charge of the Reference Library Service, Gavin Higgens, who works direct to me, is a highly qualified professional with many years' experience of reference work.

It is another of my close colleagues, Geoffrey Whatmore, who heads the News Information Service. He, too, is very much a professional, and indeed the author of the only book there is on press cuttings libraries. Like the Reference Library Service, the News Information Service, too, is divided into five main units: one to serve the needs of BBC radio, one the External Services, two, for geographical reasons, to serve the Television Service, and one central unit to supplement the other four and also to supply cuttings on a fairly limited basis to BBC programme makers outside London. As the name implies, the News Information Service—or News Inf as it is more widely known within the BBC—concentrates on current information, mainly for the use of people in the news and current affairs programme areas. In the total system there are no less than some 25 million press cuttings, of which about 10 million are single copies, the remainder being duplicates cross-filed where a cutting refers to more than one subject. In addition, the system holds copies of the Monitoring Service Summaries of World Broadcasts, about which I spoke earlier, and copies of news bulletins produced by the BBC. The whole is a collection of information that is probably unparalleled, certainly in Europe, possibly anywhere. The system differs, for instance, from the many excellent newspaper libraries in Fleet Street in two respects: first, by virtue of the fact that it includes as major ingredients substantial amounts of BBC-generated material that is not reported in the British press. The Monitoring Service Summaries give a wealth of detail, perhaps minutiae, about foreign affairs, that is not newsworthy to a general British public, while our own news bulletins to remote parts of the world again include facts, and rightly so, that do not find their way into the pages of the *Daily Express* or *The Times*. The second difference from the Fleet Street libraries comes from the different selection of material from which cuttings are taken. In Fleet Street I believe it to be the case that each library cuts very heavily from its own particular newspaper and more lightly from other newspapers or journals on a supplementary basis. In the absence of that particular kind of house loyalty, the BBC's selection of material to be cut is much wider. It covers all the major national newspapers, the two London Evening papers, about a dozen provincial papers and some twenty or so periodicals ranging from *Private Eye* through *Punch* to the *Political Quarterly*. In all, about 1,200 cuttings are added to the system each day, offset to some extent by the withdrawal of cuttings of no further interest.

The principles of the classification methods that we follow have been described in some detail by Geoffrey Whatmore at another Aslib function, so I do not propose to go into the subject in any detail again here. Suffice it so say that the cuttings are classified with a high degree of precision according to an extensive list of subject, geographical or biographical headings.

Although the system is indeed precise, it has on one or two occasions been misused. A new and zealous office junior had among the day's cuttings to be filed away one on Virginia Water. He solemnly put it among the biographies, even though it talked of draining and cleaning to be done in the next six weeks. Another unusual 'biographical' enquiry occurred on Monday. We had the news of the death of Doublet, Princess Anne's horse, at about 12.30. The newsroom wanted the horse's biography for the *World at One*. Extensive though the collection of biographical cuttings is, it does not include horses. One of the enquiry staff managed to get the information together in time, from Princess Anne's biography file and the horse jumping files.

The *Summaries of World Broadcasts* which are incidentally registered with the Post Office as newspapers, are treated as press cuttings and classified and filed away as such. The news bulletins, however, are kept separately and indexed on more or less conventional lines.

It is probably the various News Information libraries that work under the greatest pressure throughout the department. Not only is there a substantial amount of classifying and filing to be done each day, but also, and more significantly, the way the libraries are used makes pressure unavoidable. It is by no means uncommon for a news story to be added to a bulletin while the newsreader is actually on the air. It follows that News Information staff are liable to be asked for material to check or supplement a fact within, literally, seconds. That occasionally they fail to produce in time what is needed is inevitable; that they frequently succeed, as with Doublet's biography, is much to their credit. If there is a major disaster, an air-crash, for example, the sort of questions asked are: 'when was the last?' 'What is the biggest-ever number of fatalities?' 'Has the same type of plane ever crashed before? Where?' The answers to questions such as these can never be found in Reference books. No book could ever be sufficiently up-to-date. It's worth adding that there are an enormous number of deadlines to be met. On domestic radio alone there are about 80 news bulletins and summaries every day; a news story might break immediately before, or even during, any one of them.

It is, of course, not only in this hard news area that the News Information Service is used or that the enquiry staff are under such pressure. The range of users is as extensive, although not quite the same, as the range of Reference Library users. They embrace most programme makers in the current affairs area: producers, editors, scriptwriters, correspondents, reporters and researchers from all three output directorates, Radio, Television, and External Services, and many more not in current affairs. Schools broadcasts, documentary programmes, outside broadcasts, that is broadcasts describing events such as Royal ceremonies or major sporting occasions, all need the kind of detailed information that can be found only in cuttings from newspapers and periodicals, and only then if they are carefully classified and readily available. Such cuttings, or references to bygone news bulletins, are of course supplementary information and rarely prime sources. To go back to my earlier example, the actual news of the occurrence of an air-crash comes from the news agencies or from one of our own correspondents, or quite probably from both. Broadly speaking, it is News Inf that is used to supply detailed or general background information to events in which there is a current interest.

When a programme is complete, in the sense that the script is written and the visual details have been checked (and by that I mean that the full resources of the Reference Library, and the News Information Services have been used, as appropriate), even at that stage there is still an important information system at the disposal of programme makers. It is one peculiar to broadcasting organizations. Whereas newspapers and publishers have their own house-styles, whether it be Harold Evans' standard work on newspapers or Fowler's *Modern English Usage* and the *Oxford English Dictionary*, broadcasters, both radio and television, have to put into sound the words that have been written. The fòrmidable còntroversy (and I don't mean formìdable contròversy) in the press in recent months shows only too clearly that the pronunciation of English is by no means a straightforward matter. For many years, the BBC has had a Pronunciation Unit, whose role is to give advice on the pronunciation of English and foreign words in English broadcasts. This advice is mandatory for newsreaders and announcers, while others on the staff are urged to follow it. The main points of the BBC's policy on English pronunciation are these: for British personal names and titles, we use the pronunciation adopted by the individual concerned. Mr Poulson, the former architect, calls himself 'Poleson' not 'Poolson'. For British place names, we follow local educated usage. In practice, that means that the Unit consults the local vicar or the town clerk and the police. And that is not quite the same as saying, as John Ebdon did in his programme on Monday, that the town clerk is helping the police with their enquiries. For foreign personal names, we use as close an approximation to the native pronunciation as possible, while for foreign place-names we use an established anglicization where there is one. Where none exists, the Pronunciation Unit makes a recommendation based on the native pronunciation. For foreign languages occurring in a basically English programme, as for example, the text of song titles or the first lines of poems, we are now seeking to use as accurate a pronunciation as practicable, particularly in the case of European languages.

A lecture on the organization of the BBC's information flow, the task I have been set, is not the occasion for me to discuss in any detail the thinking that led to the formulation of these policies. In terms of information flow, the Unit is a centralized one, serving, as does the rest of my Department, Radio, Television and External Services. The information that the Unit has compiled over the years is held centrally in card index form. Each card, and there are at present about 150,000 in total, is headed with a particular name or word and a phrase to describe it—character in a play, Russian family name, Welsh town, and so on. The card then gives the actual pronunciation of the word transcribed in the International Phonetic Alphabet and alongside that the recommended pronunciation, written in ordinary English characters. Each card also gives briefly a note of the authorities consulted and the justification for the pronunciation finally recommended. Card indexes with less detail but embodying the recommended pronunciations are maintained in the three main London newsrooms and in the Radio announcers room, so that some guidance is available to newsreaders, in particular, even when the Pronunciation Unit Staff is not available.

Another important part of the Unit's services is the giving of advice on an *ad hoc* basis. At such times as a General Election or the Olympic Games a substantial number of new names crop up or old ones that have to be rechecked. Complete lists of all candidates or competitors are drawn up with recommended pronunciations, and widely circulated. By contrast, the Pronunciation Unit is also asked for specific advice by individual producers. Let me refer again, by way of example, to 'The Pallisers'. If you saw last Saturday's episode (and if you will forgive the plug it is to be repeated tomorrow evening) you will know that Phineas Finn is under suspicion of murder. I don't think I shall be giving away the plot, and indeed in this audience I am sure it is well-known in any case, if I say that he is brought to trial. A key witness happens to be a Pole who speaks no English, so the court decides to conduct a small part of the proceedings in Latin. How would well-educated Englishmen speaking English public-school Latin in the late 19th century converse with a Pole speaking European church latin? To know the answer recommended by the Pronunciation Unit, you will have to stay tuned!

I have discussed at some length the operations of the three systems on the Reference side of Reference and Registry Services. I should now like to turn to the relationships between them individually and between them collectively, and the BBC they serve.

All these systems are well-established parts of the BBC. The Reference Library Service had its beginnings in Savoy Hill days. When the present Broadcasting House was brought into service 42 years ago, in May 1932, it was allocated one of the largest rooms then in the building. Incidentally, it very soon proved too small; and after a number of neighbouring offices were added, somewhat unsatisfactorily, over the years, the Central Reference Library was moved a couple of years ago to the Langham, opposite Broadcasting House, where it now occupies the major part of the ground floor. The Pronunciation Unit had its beginnings almost as long ago, in the Advisory Committee on Spoken English set up by Lord Reith in 1926. The Unit has existed in its present form since 1939. The News Information Service is, just, the youngest of the three. That had its beginnings as an adjunct of the Newsroom in the late 1930s and its collection of cuttings on any substantial scale started in 1939. Until comparatively recently, the three systems were organizationally quite separate. It is always easy to criticize our predecessors; no doubt to them such an arrangement was both logical and efficient. Be that as it may, in the mid-60s the first steps to co-ordinate the three were taken, and in 1969 the three systems were brought together, with the Registry Service and Written Archives, to form Reference and Registry Services. This arrangement has, I believe, much to commend it. In professional terms, there is still a long way to go. As far as the users are concerned, and in common with any library service, we exist solely because of them, their need is for information and whether that is to be found in a book in a Reference Library or in a press cutting in a News Information Library or indeed in a recent Stationery Office Publication which might well be found in either, is largely immaterial. The problem is further complicated by two facts. Back in the past when the Reference Library and News Information Services were unrelated different practices were followed in each. Different alphabetical arrangements grew up; different variations permitted by the Anglo-American code were followed and in some cases procedures that were positively contrary to the Anglo-American Code were introduced. The other fact that caused great problems is a physical one. There are five Reference Libraries and five News Information Cuttings libraries, for inescapable reasons of geography. How much easier it would be if there could be one area, and it would have to be a large one, where all the BBC's stock of books, cuttings and allied material could be housed. But even 10 separate libraries are not enough to ensure that every user has one information point in the building in which he works. If the Registry Service is included as well, Reference and Registry Services has libraries or units in no less than 26 different buildings in the London area.

I believe there is no immediate answer to this geographical problem. To have all Radio, Television and External Services, together with the Central Directorates, in one enormous building, is impossible. But it is certainly possible for the variations of practice that I have mentioned to be standardized. Studies are being undertaken at the moment in a number of areas with a view to introducing a much greater uniformity of procedure. A short while ago, for example, we started classifying the daily newspapers centrally instead of in each of the five libraries, thereby ensuring a common classification system. It also brought the benefit of reducing costs, although that is of course an aspect of the Department outside the scope of this lecture. I mentioned earlier that there are 14 different library systems in the BBC. Those in charge meet together regularly and we have recently set up a sub-committee consisting entirely of people throughout all parts of the BBC whose normal full-time work is cataloguing or classifying. As a sub-committee they are attempting to work out a uniform code of procedure that in time all BBC libraries will follow. You don't need me to tell you that it will be a long task, complicated by the fact that much of the material to be classified and indexed does not originate in print but in spoken material that has to be transcribed. I will not dwell on the point, beyond saying that the name of the Libyan leader, Colonel Gadafy, can be transcribed into English in 43 different ways.

In organizational terms, the grouping together of the print-based library systems also has advantages. The BBC as a whole collects a vast amount of information, some of which it broadcasts. Some it stores for possible future use, some it discards. These processes are being increasingly systematized.

The BBC has a well-developed computer centre of its own which is used, and heavily used, at the moment on such matters as programme planning, studio loading, production costs, various engineering and transmission processes as well, of course, as the payment of salaries and fees. It is not used at all in the control or processing of information in the sense that I have been using the word this evening. We are about to set up a limited project to assess how far computer-assisted indexing techniques would be suitable for material in parts of the Department and at what cost in money terms. This project is to some extent a pilot one. If the advantages of using computers are seen to be real, then undoubtedly we shall investigate their wider use in other areas as well. But clearly, a development such as this would be unthinkable in a large collection of small units, or even in a small collection of large units, if each uses its own alphabet and its own indexing structures, to say nothing of its own standard of transcribing into English from foreign languages.

While I have been talking, Radio 4's PM Reports has given way to the Six O'clock News and 'Twenty Questions'; Nationwide has followed Magic Roundabout, and the daily transmission to Yugoslavia has started. When I left to come here this evening the main news story of the domestic services was the horrifying story of the children held as hostages in an Israeli school. No-one yet knows what the main story will be in the Nine O'clock News tonight, nor how far the news editors and subs will need to make use of the various libraries. Still less does anyone know the range of enquiries that will come to the department tomorrow.

Rationalization of serial holdings in special libraries

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Abstract

This paper describes progress which has been made towards the development of a procedural model intended as a code of good practice to enable special librarians to effect economies in their journal holdings by systematically planned use of the BLL.

A theoretical model suggested by B. C. Brookes was tested on various sets of usage data from seven special libraries but the results proved to be unrealistic in terms of immediate provision to the user. A new experimental approach has now been developed based on the total use versus total cost of a journal collection.

Introduction

THE BRITISH Library, Lending Division (formerly the National Lending Library for Science and Technology) has been fully operational since 1962, yet few special libraries have analysed the use they make of its services. Most special libraries still use the BLL arbitrarily on an *ad hoc* basis: their demands on the library are seldom planned in terms of cost effectiveness. The acquisition, lending, photocopying, and storage policies all too often evolve in isolation from the BLL's central resources.

The development of a generalized procedural model to optimize the use of the BLL would be of vital importance to special libraries in that it could be applied as a code of good practice in their acquisition and borrowing policies with perhaps minor modifications to take cognizance of peculiar local conditions. The development of such a model would be particularly appropriate now that many industrial librarians are being pressed by their managements to make economies in information services. The BLL has on numerous occasions drawn the attention of special librarians to the economies which could be effected by librarians making more intensive use of BLL photocopying facilities and the Dainton report[1] has also underlined the importance of a planned approach to the periodical subscription versus photocopying problem. Dainton in fact specifically recommends that 'relative costs and the advantages to both user and the supplying library of supplying a request by loan or by photocopy should be investigated'. As no serious work has been undertaken in this field OSTI agreed to support the research project outlined in this paper. It was decided that an experimental technique suggested by Brookes[2] could serve as a basis for the development of a practical model.

After ranking journals in a specific subject field in order of number of relevant papers produced within a given period, Brookes postulated that all titles falling below a determinable cut-off point could be cancelled and requests for papers in these journals could be monitored and identified by using SDI, abstracting and indexing services as a back-up. In this project it was considered impractical to count the number of relevant papers in a subject field; special libraries require a workable and practical library, not a collection of hypothetically relevant papers but a journal collection which will be used by their clientele. The best assessment of a journal collection is to count how many times the journals have been used, assuming that each time a journal is borrowed, photocopied or referred to by a user he is looking for something relevant to his interests.

The Brookes technique was originally applied by the authors in a survey of a large industrial research library where it was demonstrated that although the approach might be theoretically valid, substantial modifications would be necessary to the model before it could be offered as a package for general application. The model has now been tested on usage data collected from five industrial libraries of various size in the Merseyside area.

Application of Brookes' model

In applying the model it was necessary first of all to calculate (a) the average cost of a journal in the subject field under examination, plus the average cost to the library of selection, acquisition, processing and maintenance of one journal for one year, and (b) the average cost of purchasing a photocopy from the BLL, including staff costs. The first value can be called A and the second P. The ratio of A to P and the resulting value r is the number of useful articles which the journal must produce for its retention to be economical.

For example, the average cost of a journal in a defined subject field may be £20 (including processing costs) and the average cost of purchasing a photocopy from the BLL may be £1; thus a journal must produce 20 uses in order for its retention to be economical. The collection of data on journal usage would be required to identify the journals which were used less than 20 times per annum; these journals would be uneconomic for the library to hold and requests for the papers they contained could be satisfied by the acquisition of photocopies from the BLL.

Costing periodical handling procedures

In addition to the average journal subscription cost, A also includes the cost of handling a journal subscription for one year. The quantification of this sum necessitated calculation of staffing costs, binding and storage, etc. A literature search on this topic was undertaken but no recent papers could be identified that gave staffing costs in the detail required. The operations required in the ultimate placement of a journal on the shelves were first analysed; the steps involved are tabulated in Appendix 1. An annual salary had to be calculated for all staff involved in the journal handling operations. Librarians salaries can be obtained from several published sources but there appears to be little published information on the salaries paid to junior library staff. In an effort to obtain a figure for lower-level staff, contact was made with the Library Association, Aslib, and the Institute of Information Scientists, all of whom felt that there was need for published information on junior staff salaries, but were unanimous in saying that they knew of no published work. Liaison with the librarians co-operating on the project produced an estimate which could be applicable in the North West. A circular letter was sent to a random sample of special libraries throughout the country asking for an average salary as paid to their junior and senior assistants. The replies which were received gave salary scales which were compatible with those already calculated, indicating that the salary differential throughout the country at this level is minimal. An average salary was then assessed for all levels of staff involved in journal handling operations. A method of calculating average net salary, plus superannuation, pensions, insurance, office machinery, postage, accommodation and overheads, employed by the Civil Service Department, was used to arrive at average gross staff costs. These figures were applied to all processes involved in journal handling and a sum of £3.10 per journal was obtained. Average binding and storage costs were then added to give a tentative figure of £7.80 per journal for the purpose of testing the model. This costing is open to criticism and the authors acknowledge the wide variation in processing and staffing costs in different library situations.

The processes involved in purchasing a photocopy from the BLL are given in Appendix 1.

Having obtained values for A and P the formula was applied to the data collected in a large industrial research library. The first test consisted of 316 current titles with comprehensive usage records covering current awareness, loans and photocopies for a six-month period; these were ranked in order of use. The value for A was halved to cover six-month costs.

From formula $A/P = r$

$$\frac{\text{£}20.30 \text{ (average cost of a journal) \& £}7.80}{2} = \text{£}14.05$$

$$r = \frac{14.05}{.80} = 18$$

The journal ranked 41st producing 18 usages in the period was the cut-off point. These results indicated that only 41 journals out of a total of 316 were economical to retain. However if the remainder were cancelled only approximately 50 per cent of the articles formerly available would have been immediately accessible to the library users and they would have been forced to await the arrival of BLL photocopies for 50 per cent of current journal provision.

Application of the model to a specifically defined subject field

The model was then tested on a specific subject field containing 57 journals within the same journal collection examined above, the average cost of a journal from this field being £10. The formula A/P indicated that 29 of the journals were the optimum number of titles which were economical to retain. Approximately 50 per cent of the journals produced 89 per cent of the total number of usages. This cut-off point resulted in the retention of a larger percentage of journals than did the application of the formula to the total collection but this can be explained by the low cost of journals in the field. Data from a large science library covering a twelve-month period of use was next used to test the model. Both specific subject fields and total holdings within the library were investigated but again the results proved to be unrealistic in terms of the immediate library provision which would be the result of the application of the formula. Attention was then turned to other methods of arriving at a cut-off point.

An alternative method of testing Brookes' formula

It has been shown in using Brookes' model that a ranking of journals in decreasing order of use is required and after applying the A/P formula those journals falling below the cut-off point at the tail end of the ranking are deemed to be expendable. Often the cost of a little used journal may be so low that each use is less than the 80p cut-off point (cost of acquiring a BLL photocopy); certainly it is feasible that a free journal used a few times a year would justify a place on the shelves. In the light of this observation it was decided to examine an alternative method of arriving at a cut-off point by using a cost-per-use approach. The subscription cost for each journal (using the specific subject sample described previously) was found and added to the £7.80 handling cost. The figure was halved as the data covered a six-month period, and then divided by the number of recorded uses to determine how much each journal use had cost the library. A bar chart using plain graph paper was drawn (see Appendix 2) by plotting the journals in ranked order of use against a monetary scale. A horizontal line was drawn at 80p. It was seen that more than the 29 of the 57 journals could be retained; this cut-off point would result in a less dramatic effect on previous provision to the library's clientele than the Brookes formula. The bar chart or cost-per-use method was developed to demonstrate that while Brookes' formula produces a mathematical cut-off point there are in fact journals below this point which are less costly per use than some higher-ranked journals which the model finds economical to retain. A significant feature of the cost-per-use method is that the relating of all journals to an average cost is eliminated.

Exhaustive tests were carried out on the Brookes formula using data collected from the five co-operating libraries, including a small engineering library which had complete control over journal use, rendering usage data virtually 100 per cent accurate.

The results of all tests indicated four major drawbacks to the Brookes technique:

1. *Inconvenience caused by delay*

Library users may be inconvenienced by delay in the receipt of photocopies of papers in journals judged to be 'uneconomic' by the formula and it is possible that the users' work programme may be held up during this period of delay. This inconvenience is naturally a cause of concern to librarians who feel that a high standard of journal provision is paramount and that their users would soon express dissatisfaction with a library which could not cater for a high proportion of their immediate needs. It may be true to say that a long-term research project and current awareness reading would not be seriously affected provided that efficient back-up services in the form of abstracting, current awareness journals and SDI services were available. On the contrary library customers who are trying to solve a specific problem, for example in research, plant maintenance or production could be seriously affected by delay. This factor was investigated in depth and a report on the findings will be published in a subsequent issue of this journal.

2. *Provision of minority interest journals*

Journals which are marginal to the library's main speciality are valued by users as they provide useful background to research projects. It is impossible at present to place a meaningful value on this information for background research, but some provision of this type of information gathering is essential. Another problem is seen in the provision of one or more journals specifically intended for one section of the users or for one person. If an organization requires the services of a specialist in a field marginal to its main activities it is reasonable to argue that at least one journal should be supplied by the library to satisfy the individual's requirements. The implications of this type of library provision are that Brookes' model or any similar model with its resulting cut-off point can never be rigidly applied without examining the modes of use of the journals which are considered to be expendable by the model.

3. *Varying patterns of journal use*

The diverse nature of communities served by special libraries has serious implications on the collection and evaluation of usage data. It has been shown[3] that engineers are more likely to approach the librarian for assistance than scientists as they tend to use the library for the solution of a specific problem in relation to a current design, or production problem. Approaching the librarian frequently results in the provision of a loan or photocopy thus producing a recordable journal transaction. Scientists who are more likely to do the work themselves generally use abstracting services to discover the papers relevant to their needs, then they consult references they have gathered in the library. A large percentage of the use made of many special libraries is therefore unrecorded, thus the data required to implement the model successfully is unobtainable.

4. *Variability of journal subscription cost*

The wide gap between the cost of journals in different subject fields is a major problem: it has been estimated that the average cost of chemical journals is approximately £50, while that of engineering journals is £20. Taking Brookes' formula A/P a chemical journal costing on average £50 plus processing costs would have to be used more than 70 times in order to be economical but an engineering journal would require only 34 usages before it became economical. There is a direct relationship between the level of cost and the level of use in Brookes' model: the lower the average cost of a journal in a given field the lower the amount of use required for its retention. The value to a researcher of one item picked up from a journal in the library may pay for the annual subscription to that journal in terms of the effect on the research worker's productivity. If the journal had not been available in the library at the time the article may never have been discovered. Thus it is not feasible to apply the same law to a library collection of expensive journals as to a technical library where publications of a more commercial nature are less expensive.

In view of these practical disadvantages attempts were made to incorporate additional factors into the model to allow, for instance, for journal costs in different disciplines, in the form of a weighting figure and the effect on the user of delay whilst awaiting the arrival of photocopies. After detailed consideration it was decided that the variables involved in estimating these two factors were so complex and diverse that any attempt to quantify these in monetary terms for incorporation into a formula would be virtually impossible. Following this decision alternative methods of rationalizing journal provision are being examined.

If a librarian is faced with budget cuts he is usually told that his budget will be cut by x pounds or x per cent in the following year. His immediate reaction is to look for a solution which will enable him to make the necessary cuts in such a manner that his users will be faced with the minimum reduction in service. To simplify this approach the authors have evolved a technique involving the relationship between the total use of a journal collection and total cost of journals.

Cost versus use: practical procedure

1. A collection of journals in the field of life sciences was ranked in descending order of use (usage data consisting of photocopies, loans and in-house current awareness) and a cumulative total was achieved by adding each journal's usage figures in turn.

2. The annual subscription was found for each journal in the collection and these figures were cumulated again in decreasing order of use.

3. Using plain graph paper with the horizontal axis representing cumulative cost of journals in £1 units and the vertical scale representing cumulative use, each journal use was plotted against cost and a curve was drawn (see Appendix 3). It was seen that the curve rose steadily and eventually reached a point where a fall-off was observed. Eight graphs from different sets of usage data were drawn and in order to compare the curves produced by the different data all values were converted to percentages. It was noted on each graph that a point of diminishing returns is reached between 60 and 70 per cent of total journal costs, and approximately 90 per cent of use in all cases. As the curves on the eight graphs drawn followed a similar pattern a standard curve was calculated (see Appendix 4) using the median figure for percentage of use at 10 per cent intervals from the costing figures. It is foreseen that this will be the starting point of the development of a generalized model. The advantages of this cost-versus-use approach which are outlined below have led the authors to believe that the technique should be developed further.

(a) The average cost of journals in different subject fields has no bearing on the nature of the curve: journals are not being judged against an 'average journal cost' but are being viewed in relation to the angle of the slope they produce on a graph demonstrating the point at which a diminishing returns effect starts to operate. Thus the librarian is able to examine journals in the context of the whole collection rather than as separate entities.

(b) It is not necessary to calculate an average processing cost of journals which would in any case result in anomalies due to the variability of the number of journal issues received in the period. The librarian would be required to estimate total expenditure on journal processing per annum, and estimation of savings would involve deduction of a percentage for journals which are uneconomical.

(c) The problems of data collection are minimized. Difficulties of monitoring total usage of a journal collection will always be encountered as most retrospective in-house use of journals will go unrecorded. It has been maintained[4] that unrecorded use of literature is directly proportional to recorded use. The conversion of available usage data into percentage will, in addition to facilitating the comparison of graphs for different libraries, reflect these unrecorded uses and thus compensate for the use which cannot be measured.

Aims

The aims in developing the total cost versus total use approach are to produce a model which will indicate graphically the point at which it is becoming increasingly uneconomical to retain certain journals in the collection and to indicate the point at which the scrutiny of the conditions of use of individual journals in the collection can commence. The model will be applicable both to specifically defined subject areas or to the entire journal collection. It will enable the librarian, pressed by management to reduce his journal budget, to estimate the savings which he can effect, and also to determine a diminishing returns point before which budget cuts would only result in the deflection of costs into other areas, for example, excessive use of the BLL services and perhaps the necessity for individual users to seek alternative sources of information at a greater cost to the organization.

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APPENDIX 1

Journal processing and handling for calculating journal handling costs

Operation	*Processes*
1. Selection	Consultations with subject specialists and Librarian's decisions.
2. Ordering	Clerical compilation of order, checking prices, invoices. Typing order. Accounting. Queries arising.
3. Receipt	Mail sorting and delivery. Recording.
4. Filing	Tidying and maintenance.
5. Cataloguing	Production of holdings list—preparation, typing, printing.
6. Binding	Clerical preparation.
	Total £3.09

Other costs

Binding (@ £2.50 per vol.)	£2.50
Storage (per average title)	£2.20
Holdings list printing	1
Total per annum	£7.80

Processes and costs involved in photocopy purchase.

The processes involved in purchasing a photocopy from the BLL were broken down into the following steps:

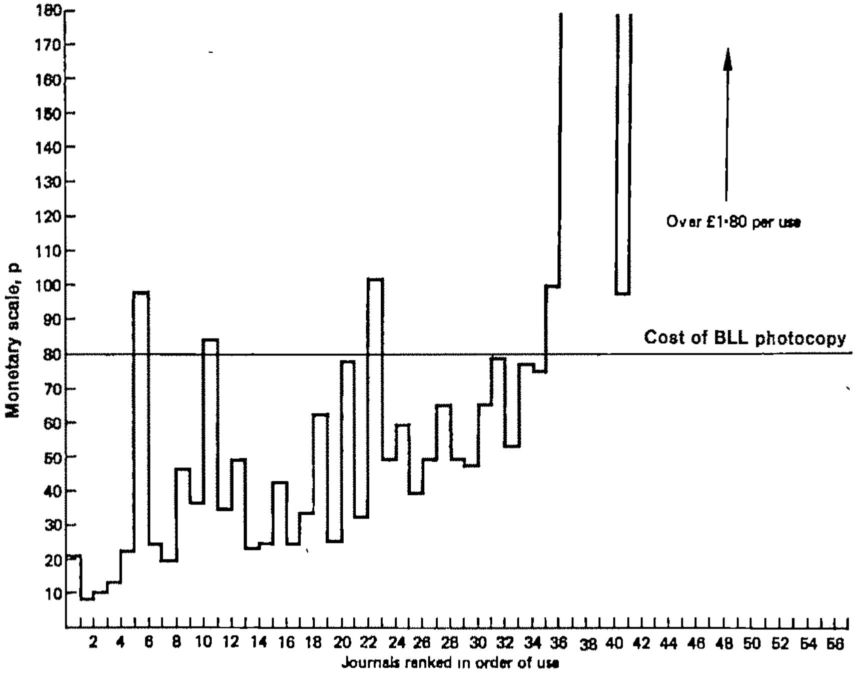
(1) Verification of the reference
(2) Writing/Typing requests
(3) Maintenance of request records
(4) Mail handling
(5) Matching photocopies with requests on arrival, and dispatch to the requestor.
(6) Handling queries arising out of incorrect requests, etc.

The cost of the average photocopy was estimated as follows:

Basic BLL cost for one loan slip	25p
Staff costs	50p
Mail handling and postage	5p
Total	80p

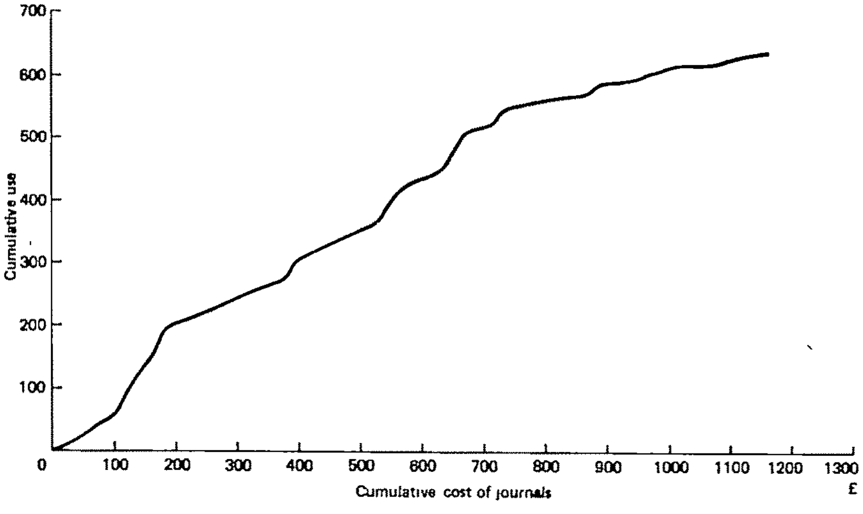
APPENDIX 2

Cost per use: specific subject field



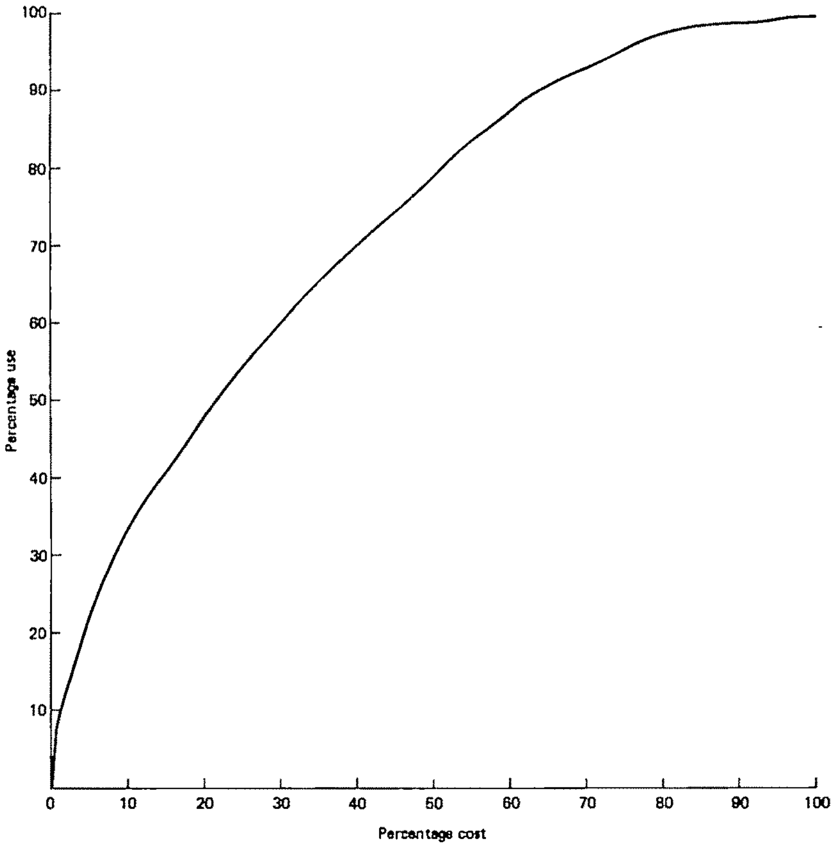
APPENDIX 3

Cumulative use against cumulative cost: life sciences



APPENDIX 4

Standard curve drawn from the median of eight graphs



The subject specialist librarian in an academic library: his role and place

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Adapted from a paper presented at Scarborough, November 1973, to an AAL Weekend School on Staff Structure and Deployment

Introduction

THE LIBRARIAN's basic duty has always been to acquire, to organize and to exploit a collection of books and other sources of information. Concerning his ability to perform the first two tasks there has never been much doubt, but about the third responsibility he has either kept very quiet or done little—or both!—if we are to judge by the dictionary definitions attached to our profession. Emphasis on exploitation arrived with the twentieth century when closed access was swept away in the public library. It was not long before the merits of subject specialization became apparent to those who administered the public library, and subject departments were born in the days following the First World War. It took another World War before similar ideas had impact on the academic library world—witness the developments at University College, London, at the end of the 1940s, described by Scott[8]—and only in the past twenty years have the results become apparent. And yet this is a strange situation, because the librarian of an academic library has traditionally been a subject specialist himself. As far back as the Renaissance, universities had learned librarians who were scholars in law, or literature or theology. This tradition has been carried on until the present century. Libraries in German universities in particular appear to have seen the need for the continuance of the scholar-librarian, with their scheme of 'Referenten'. In Britain, university libraries have remained faithful to the idea of the scholar-librarian but it has not resulted in much 'exploitation' of the stock until recent years, with the emergence of the 'subject specialist librarian'.

Definition

Before examining the role of the subject specialist librarian it would be well to define the term if possible. Once it has been identified we can pin the species down and examine it critically. Definitions are available: Humphreys[4] saw them as 'members of the Library staff appointed to develop one or more aspects of a library's technical or reference services in a particular subject field'. Note: 'technical *or* reference services'.

Holbrook[3] was concerned that this definition lacked clarity and offered an alternative, which he firmly related to the Polytechnic Library environment: 'A subject specialist is a member of the library staff appointed to organize library services in a particular subject field'. Holbrock's definition appears on the surface to differ little from Humphreys', but he does extend the definition considerably. He points out that the subject field may be broad or narrow; he spells out the subject specialist's responsibility for 'developing the services and maximizing the use of the library's resources in his area'; and he emphasizes that 'a wide variety of duties' is implied in the role. Explicit statements such as Holbrook's are of value in formulating a job specification for the subject specialist. (N.B. The use of the shorter form 'subject specialist' is, to say the least, somewhat equivocal. There is a distinct likelihood that readers will misinterpret the term to mean 'an expert in the subject concerned' rather than 'one who devotes himself to a particular branch of a profession'. Common sense and honesty suggest that the word 'librarian' be added to the designation.)

Before leaving the question of definition, it is worth noting that in university libraries at least, another, totally different term is often used for someone who has the same sort of responsibilities to a very large extent. The term is 'Information Officer' and his activities are described as 'Information Service'. In any particular university library there may be one or more persons engaged in this information service. The main differences from the subject specialist librarian relate to responsibilities for stock building and formal liaison with teaching departments on library matters.

One further 'disguise' needs to be penetrated. The 'Reference Librarian' to be found in one or two British university libraries (e.g. Leicester) assumes some of the responsibilities of both the subject specialist and the information officer, but probably leans towards the latter in his prime functions.

Lastly, the American university library frequently sports a 'Subject bibliographer' who is primarily, even solely, concerned with stock acquisition.

Personal characteristics

When the work of the subject specialist librarian is being considered it is necessary to begin with an examination of the characteristics and qualities of the man or woman who is best fitted to play the role. Humphreys[4] and Holbrook[3] and others who have written on the topic have asserted that the subject specialist librarian is likely to have an academic background in the subject of his speciality. Holbrook states that he 'would normally have obtained at least a first degree in the subject concerned'.

Humphreys earlier had suggested that he 'would have commonly obtained a first or research degree in the subject' but, and here he makes an important reservation, 'it is not essential that he should have qualifications in the subject when he is appointed'. (In passing, it may be recalled that the 'Referenten' of the German university library normally possess a doctorate). This question of academic background should be examined more carefully. How many subjects is it likely that a university, or polytechnic, or other college teaches and researches in? The very words 'university' and 'polytechnic' imply multiplicity. Unless certain subjects are to be denied their librarian-specialist, a great number are going to be needed in such libraries, many more, it can be safely asserted, than can be afforded (or, perhaps, employed economically and efficiently—or even *found*!). The author believes, with Holbrook, that the subject field of a specialist librarian may be 'broad enough to cover an umbrella of related disciplines contained in a faculty/school/departmental structure' and would support this by quoting that his own responsibilities in the University of Bradford presently cover such a structure, embracing, as they do, four major branches of engineering and several offshoots. It follows that the subject specialist is most likely, then, to have received academic training (or practical experience) in no more than one of a group of related subjects for which he is responsible.

It is even possible, as Humphreys remarked, that he has no formal qualifications in the subject, or a related one, at all. The author must here declare an interest, because he has no academic qualifications in the field in which he 'specializes', i.e. engineering. His background was restricted to study, practice and teaching in radio engineering at technician level whilst serving in the RAF. The reader must therefore allow for some measure of special pleading in the argument that a subject specialist librarian need not possess a first degree in his subject area. There is no doubt, however, that, like any other senior member of staff in an academic library, he should have or should obtain a degree as a certain way of acquiring full understanding of the meaning of study at undergraduate level. The only drawback is that this is presently allowing too many refugees from the humanities to enter the subject specialist librarian field when there is a need for physicists, mathematicians, biologists and engineers. It is just as certain that he should have received formal education and training as a librarian, i.e. he should be a Chartered Librarian. Correspondence in *College and Research Libraries* has recently emphasized the point; to quote one writer,[1] 'The mere possession of an M.A. or Ph.D. degree certainly does not qualify the holder as a subject specialist *librarian*'.

The position of the new generation of librarians now emerging from the library schools is of interest in this context. Will those with a first degree in librarianship, having received less than the full treatment of both librarianship and their 'academic' subject, have career prospects as good as those for the honours single-subject graduate with a post-graduate course in librarianship?

The implication of this insistence on professional qualifications rather than (if not as well as) academic qualifications is clear: the author believes that the trained librarian is, or can become, a specialist in the literature and librarianship of a particular subject, which is what subject specialist librarianship is all about.

Objectives of subject specialization

Consideration of what the subject specialist does should start with a formulation of objectives and continue with a listing of strategies. The objectives and their purposes set out below conform to the precepts and practice of the University of Bradford Library; some idea of the diversity of duties performed by subject specialists in other university libraries in the UK may be obtained from a study of the data collected and reported by Roberts.[7] Tables 9 and 10 give the data, but Roberts' interpretation is erroneous.

1. To provide a stock of books and other library materials designed to serve

the total readership of the library concerned with a given subject area.
The purpose here is clearly to meet all the demands made upon the library by its readers.

2. To provide assistance to readers in their search for library materials, or in their use of the facilities and services, and in their search for information, all within the subject area for which the subject specialist is responsible.
   The purpose is once again to meet the demands made by his readers.
3. To provide tuition in the use of bibliographical and reference works so that a reader may find information for himself in the appropriate subject area to meet both his immediate and his long-term needs.
   The purpose here is contained in the statement of the objective.
4. To provide liaison between teaching staff and the library service in the relevant subject area.
   The purpose here is to ensure that the development of the library matches the development of the teaching and research programmes.

The above objectives would probably be accepted by most university and college librarians today, but certain other objectives would be regarded as more equivocal:

5. To provide an information service drawing the attention of teaching and research staff to new publications relevant to their work.
6. To provide bibliographies, guides, reading lists, etc., for readers in his own subject area.
7. To provide assistance with classification and cataloguing problems and to help to formulate policies for these processes within his subject area.

In the University of Bradford Library the first four objectives are given full attention by the subject specialist librarians. Because they enjoy a large measure of autonomy, the extent to which they fulfil the last three objectives and the manner of their performance varies from one subject area to another.

Strategies

If the strategies are examined whereby each objective might be attained, some idea of the work of the subject specialist will be obtained.

Objective No. 1 (Stock provision) is attained:

1. By engaging in systematic stock selection, this stock to include materials of all kinds, book or non-book, printed or non-printed, with the aim of serving the distinct teaching and research needs of the institution.
2. By stimulating and controlling the participation of lecturing staff in the selection process.
3. By systematically and continuously revising the stock of the Library in his subject area.
4. By weeding the stock in his subject area, discarding items and relegating others to stacks or otherwise disposing of them.
5. By determining lending policies for the stock of his subject area, within the overall policies of the library as a whole.

Objective No. 2 (Reader assistance) is attained:

1. By participating in general enquiry desk service either on a full or part-time basis, possibly by roster.
2. By assuming responsibility for all enquiries concerned with his subject area which require more specialized attention than can be given in a short period of time by other members of staff.
3. By helping to resolve any difficulties encountered by readers in his subject area concerned with normal library routines.
4. By participating in discussions and planning to improve the layout of the library, the display of its stocks and the operation of its services.
5. By participating in designing and planning of new library premises.

Objective No. 3 (Library tuition) is attained:

1. By devising suitable programmes of library tuition for all levels of reader as appropriate, from First Year undergraduates to research students and lecturing staff.
2. By obtaining the full co-operation of lecturing staff in instituting courses of instruction.
3. By seeking the endorsement of the university or college academic planning bodies, for example the Senate and the Faculty Boards, for courses of library tuition, such endorsement ideally to take the form of a regulation in each Course syllabus.
4. By fitting himself to become an effective teacher and by taking steps to improve the tuition he gives by utilizing whatever teaching aids are or become available.

Objective No. 4 (Liaison) is achieved:

1. By establishing formal contact with those Schools, Faculties or Departments whose work together constitutes his area of subject responsibility.

   This probably will take the form of membership of the Schools, etc., which comprise the academic group, perhaps known as a Faculty or Board of Studies. It may include membership of an academic board responsible for the development of a group of Schools or Departments.
2. By devising means for informing himself of activities and planning in the academic group so that library repercussions of teaching and research developments are known and considered by the School or Board, and, in, their turn, by the library.

   The subject specialist may sit on committees or attend School meetings or, at the very least, see agenda and minutes of such meetings.
3. By making appropriate arrangements for close and regular contact with at least one member of the teaching staff in each School through whom all communications, in both directions, might be channelled.
4. By fostering informal contacts and establishing close and friendly relationships with every member of the lecturing staff and as many of the research students as possible.

5. By continually projecting the library as an integral part of all teaching and research activities.

Objective No. 5 (Information service) may be achieved:

1. By providing current awareness services in one form or another concerning new books, periodical articles, reports, conference papers or news items, such service being designed for individual members of staff or for groups of varying sizes.

   These services may be 'conventional', in the form of bulletins, lists or even cards circulated to staff, and prepared 'in-house', or may be computer-based and obtained from an outside source.
2. By operating a notification scheme regarding books, etc., ordered for purchase by members of staff.
3. By operating a scheme whereby lecturing staff may see books 'on approval' and examine specimen copies of periodicals. This links closely with the strategy for book selection outlined above.

Objective No. 6 (Bibliographies, etc.) may be achieved:

1. By publicizing the library's willingness to conduct literature searches and to compile bibliographies and reading lists. The enthusiasm of the subject specialist librarian for this work will certainly be tempered by the amount of time at his disposal for this valuable but exacting job. He may also question its desirability at all and consider that guidance and direction are better tactics to employ, especially if he believes, as some do, that the librarian's bibliographies are too long by half, simply because he cannot exercise selectivity; only the reader who needs the list of references can determine relevance adequately.
2. By preparing and disseminating guides to subject literature, information sources, bibliographical aids, categories of publication and library services.

   These may well be identical with hand-out publications prepared and used as teaching aids for library tuition work.

Objective No. 7 (Cataloguing and classification) may be achieved:

1. By acting as an adviser on problems connected with the classifying or cataloguing of publications within his subject area.

   In the subject specialization schemes of many libraries this advisory element is taken to the limit; the subject specialist actually does all the classifying and, sometimes, all the cataloguing too. This is justified by the arguments that the specialized subject knowledge is thus being put to the best use and that without it, satisfactory classifying and cataloguing are not possible. Both arguments are open to refutation and the author, for one, would not accept them. Much more important, however, is the fact that the subject specialist is in this way tied down to routine work which absorbs a goodly proportion of his time. His other activities thereby become an extra, instead of having priority.

2. By taking part in any discussions affecting the policy of the library regarding the arrangement of its stock or its recording in catalogues and indexes.

Careful scrutiny of the objectives associated with the subject specialist's work should enable a clear picture of his responsibilities and activities to emerge. It should now be possible to understand what he does, why he does it and for whom. As for when he does it, the implications of the remarks above concerning cataloguing or other routine duties are obvious: he does it all the time! He should be freed from administrative responsibilities so that he can devote his whole attention to providing a service. It would be possible to expand on the 'how' and the 'why' of the job, to go into detail about particular tasks which are performed within certain of the strategies outlined above, or to offer specific reasons for introducing and developing subject specialization work (to talk of the dynamic role of the librarian; of the economics of full exploitation of capital resources; of the growth and complexity of information sources; of the transition of the library into a 'resource centre'; of the educative role assumed by the librarian) but the second part of this paper will concentrate instead on the management problems concerned with the staffing of subject specialization schemes.

Staff deployment

The University or College Librarian is concerned with total deployment of resources. These resources include staff, time, materials (i.e. stock), funds and accommodation. The Librarian must therefore decide on a staffing structure which utilizes his manpower resources to the best advantage.

In relation to the senior library staff, it is very important that they be granted full academic staff status in their institution, and, as such status will almost always be linked to the possession of a degree, the library staff is likely to be composed of what may, for convenience, be categorized as academic and non-academic staff.

In the deployment of the senior staff a subject specialization structure might be superimposed or 'grafted' on to a traditional administrative arrangement, or the library might be structured to permit the administration to be fitted into a scheme which is primarily subject-oriented. In the 'grafting' scheme, library administrative routines might be managed in one of two ways:

(a) by academic staff librarians, employed full-time on their administrative duties; with, in addition, other academic staff librarians who will have subject specialist responsibilities.

(b) by academic staff librarians, on a part-time basis, whereby the remainder of their time is spent on subject specialization work.

If the staffing structure is designed to give priority to subject specialization, the administration will be separated; in horticultural terms again, this is 'division', rather than 'grafting'. The administration may then be organized:

(a) by employing non-academic staff librarians on these duties, thus freeing all academic staff librarians for subject specialization; i.e. true 'division'.
(b) by spreading the administrative load thinly over all or many of the subject specialist librarians, which is a 'hybrid' and leads one to ask: are the librarians so produced to be called 'sports'?

The importance of the Librarian's view of the role of the subject specialist librarian is obvious as it will determine the entire staff structure. His decision will depend upon several factors, but most of all upon whether he wishes all his senior staff to act as subject specialists, full-time, or whether he would rather employ some of them as administrators, if only part-time.

Other considerations will include whether he is designing from scratch, i.e. in a new institution, or seeking to introduce specialization (or some alternative) into a long-established library, which may, anyway, have inbuilt problems such as scatter of resources, several buildings, departmental or sectional libraries.

If he chooses to employ at least some of his senior academic librarian staff full-time on administration, he is at least placing responsibility firmly on shoulders which should be perfectly capable of bearing the burden. There is no automatic 'wasting' of a first-degree subject knowledge and, clearly, the situation is no worse than that in any administrative post, whether in industry or commerce, or even at the apex of the academic library staffing pyramid! In any case, flexibility would allow for rotation of responsibilities.

There is no reason at all why administrative responsibility, for sections like Readers' Services or Acquisitions, cannot be assumed by professional, non-graduate librarians. Their professional education and training fit them admirably for this.

The other alternative is the least desirable, for several reasons. If academic staff librarians are employed partly as subject specialists and partly on some routine administrative task, and cataloguing must be included under this heading, it is almost inevitable that their subject work will suffer because of the calls on their time induced by a steadily increasing administrative work load. (Or, alternatively, a routine task will be less well performed, or backlogs of work will arise because the subject work has been allowed to expand). The librarian who works under such conditions is striving to serve two masters, even if one may be less obvious than the other. Nobody works best under such conditions.

Examples and variants of these schemes can be found flourishing (?) in university and polytechnic libraries up and down the country. It is highly probable that the poorer schemes are those where subject specialization has been grafted on to the traditional administrative structure and the Assistant Librarian with an administrative responsibility has a subject allotted to him which may or may not fit his administrative function, or his personal academic background, or his inclination.

There are many cases where the administrative function has been somewhat arbitrarily allocated. For example, and these examples are not fictitious, an Assistant Librarian in one library may be the specialist in Ancient History and Classics and be responsible for supervision of the Xerox Room *and* of incoming interlibrary loans. Or another may be the specialist for Hebrew and be charged with the control of typing and book processing.

In another library the Science specialist—and what a generalist he must be!—actually administers a Science Library; he is responsible for its entire running, its staffing and its routines. He may have his own staff of subject specialist assistant librarians also.

A very common practice is to give the subject specialist the responsibility for some or all of the technical processes connected with the stock, i.e. ordering, accessioning, classification, cataloguing, so that parts, at least, of these processes are decentralized. The most popular choice is to give the subject specialist the job of classifying and/or cataloguing his own subject area of the stock. In administration-based schemes, the specialization can amount to nothing more than a parcelling out of subject areas amongst assistant librarian cataloguers who are required to be generalists in cataloguing and liaison men for library matters in particular subject areas.

It must be emphasized that these varieties are to be found in both University and Polytechnic institutions.

The staffing structure of the University of Bradford is firmly based on the 'division' principle, to such an extent that the subject specialization work and staff belong to the 'Information Division' and the administrative work and staff are part of the 'Library Management Division' (this does not mean that no graduate qualified librarians are employed in an administrative section; with the growth of an all-graduate profession such inflexibility would be clearly wrong and impossible to maintain).

Subject structure

When the Librarian has taken his decision about the question of administrative responsibilities, he must next consider the subject structure of the specialist staffing. Here it is almost certainly possible to follow a pattern which exists already in the shape of the academic structure of the institution as a whole. The subject specialist structure can sensibly fit into the Faculty/Board of Studies structure which the university or college itself has established. For example, if there are five major subject groupings, say Engineering, Physical Sciences, Life Sciences, Social Sciences, Humanities, one subject specialist may be allocated to each. On the other hand, there may be—and in most universities there will be—more than one subject specialist for each Faculty or Board.

The allocation of responsibilities will probably depend upon the relationship between the disciplines which make up a subject grouping. For instance, Bradford, like Warwick, has separate specialists responsible for different areas of the social sciences, but finds that the overlapping between the several branches of engineering would make nonsense of any attempt to allocate, for example, Chemical engineering to one librarian and Mechanical engineering to another.

The staff structure within a subject area must be determined:

(a) In each Faculty there could be one senior subject specialist with his own staff of one or more subordinate subject specialists.

(b) All subject specialists in a Faculty group may be of equal status and grade.

The disadvantages of the equal-status alternative (b) are fairly obvious and become even more so when the advantages of alternative (a) are examined. In this, the senior subject specialist becomes a small 'manager', with inevitable management problems not rendered any easier because his 'staff' are not junior assistants but are, or should be, responsible, professionally-qualified graduate librarians. The advantages of the arrangement arise from the line of command and communications within the library which is clearly established, facilitating administration and decision-making. This should make for much greater efficiency. Problems of liaison with the teaching staff and their formal School or Department system are lessened; representation on their Committees is easier to arrange. The senior subject specialist librarian is probably a more senior person anyway, and is in a much better position to hold his own in liaison with the teaching or academic staff and thereby to enhance the library's position. Such a system also creates not just a line of command, but also a promotion ladder with beneficial results for career prospects or expectations. Whilst control of the staff is necessary it is important to allow freedom of action and to ensure that there is delegation of duties.

Staff management

Having designed a staffing structure which in his view should enable the library's objectives to be attained, the Librarian, as manager, must delegate authority to his middle-management, his subject specialist staff, and ensure that they have clearly stated objectives, which lead to fulfilment of the general aim of the library itself. He must also seek to provide them with the resources whereby their objectives might be attained. This constitutes what McGregor[6] (of the famous *X* and *Y* theories) termed 'management by integration', wherein the subordinates can achieve their own goals by directing their efforts towards the objectives of the enterprise itself.

Certain factors affect the performance of the subject specialist and hence the likelihood of successful achievement of objectives. These include participation, job satisfaction, adequate rewards, good career prospects and overall needs satisfaction. They are clearly important but, as Guttsman[2] pointed out as recently as last year, University Librarians have rarely discussed such matters. It is implicit in Guttsman's paper that their attention will be forced on these issues because of the calibre of the librarians who are embarking on subject specialization as a career.

Participation

The subject specialist should be able to participate in the management of the library as a whole, in its policy formulation, in its development planning, and in its decision-making. This means taking part in meetings, sitting on committees, serving on working parties. It means thinking and reading. It means coming up with ideas, evaluating other people's bright schemes. It means carrying out surveys, performing research, analysing data and presenting results. It means all this and much more!

The Librarian will depend on the knowledge and experience of his subject specialist staff. They will have their ear close to the ground—in the library and in the teaching departments. This is where they score even by comparison with the Readers' Services Staff. The subject men will in any case work closely with the service staff.

The subject specialist has much to offer when any of the higher management problems are being discussed: planning a new library, extending existing accommodation; expanding present services; allocating resources of funds or staff; planning for a long- or short-term future (e.g. quinquennial plans and budgeting, in a university setting). Such participation is a strong feature of the Bradford scheme of subject specialization.

Job satisfaction

Job satisfaction can only be achieved if the management of the library as a whole ensures that the subject specialist has clear understanding of the library's purpose and of his own objectives. But, in addition, his ability and his competence must be recognized. He must have reasonably adequate resources to achieve the short-term targets he sets himself; he must be granted a measure of autonomy to permit him to 'get on with the job'. He must receive rewards commensurate with his performance and have prospects worthy of his potential. These may be summed up as the 'Four Rs, for "Requirements"'.

RECOGNITION; RESOURCES; RESPONSIBILITY; REWARDS

Enough has been said about the first three already, but it is worth looking at Rewards in a little more detail.

Rewards

I. Pay and Grading

The immediate and tangible reward is monetary. The subject specialist librarian must be recognized as performing professional and academic work of the highest standard and his grading and pay must be in accord with this recognition. In many universities this has meant for some time that he has been graded as a lecturer, proceeding to the maximum of the Lecturer Grade, sometimes having to surmount the same 'bar' as his lecturing colleagues and sometimes not It is not always thus, however, and it should be universal that the salary scale for a subject specialist in a university library is no less than the full Lecturer Grade. In the sort of staffing structures earlier advocated there is need for a higher scale for the senior subject librarian and this must obviously be the University Senior Lecturer Grade. It is gratifying that both the Library Association and the Association of University Teachers have come to an agreement on this, and on other salary/grading matters in university librarianship, and the AUT is presently engaged in negotiations to secure the implementation of the policy in all universities.

Suggestions regarding pay and grading in Polytechnic Libraries are more difficult to make, because, in the first place, there seems to be considerable diversity of salary and grading at the top in these Libraries as yet, i.e. the Polytechnic Librarians have not yet obtained anything like the equality of treatment enjoyed by the University Librarians (although there is some measure of difference even here). It would seem likely that various grades of the Head of Department structure would have to be used for the Librarian, for his Deputy, if any, and for his subject specialist librarians, if the right kind of priorities are to be obtained. Otherwise there will be considerable differential between University and Polytechnic subject librarian salary scales which can only be harmful to the latter institutions. Use of the Departmental Head scales will not be easy to attain, but must be arrived at.

II. Career prospects

The second aspect of the rewards requirement concerns promotion possibilities and career prospects. What chances of promotion should there be for subject specialist staff? In a word, there should be every chance. In the first place, the larger library may have a subject specialist staffing structure which permits movement upward from a junior post to a senior, still within subject specialization work. In any establishment there should be the opportunity for unhindered progress upwards, to a senior post, perhaps as Deputy Librarian and beyond that to University or Polytechnic Librarian. It is necessary to stress that such progression should be 'unhindered': those with power to promote (non-librarian interviewing bodies or promotion committees, *and* Librarians themselves) should recognize that the man with background in information service and subject specialization has as much potential for senior management responsibility as has someone else with experience in one of the traditional administrative areas of the library: cataloguing, acquisitions or readers' service work. It is impossible to suggest that either background—information or administration—is a better basic preparation; so much will depend on the man, who may, in any case, have acquired experience in both.

The attitude of Librarians is crucially important; they themselves should be unbiased in their attitude to this problem. Some University Librarians already have the right ideas on this topic and one or two have recorded the point (e.g. Guttsman[2]). But there has not yet been much opportunity to see how widespread such a progressive outlook really is. This promotion problem extends automatically into the area of long-term career prospects. It should follow that a Librarian who accepts the promotion of his own subject specialist staff to the dizzy height of Deputy in his Library is willing to offer the appointment to such a man from outside. So, the subject specialist librarian should be able to move within and between institutions to the very top. Because there are some excellent librarians in subject specialist work at present it is likely that these people will rise to the top anyway; there has been an example very recently. This will pave the way for others very satisfactorily.

It may well be that a subject specialist librarian has had experience in some other area of the library's work, but it is very possible that he has not carried administrative responsibility. To fill this gap it might be suggested that junior subject specialist staff should be given experience of this kind by rotating certain jobs amongst them for limited periods of time. Looking after Readers' Service work is a good example of the kind of job where the librarian will have to manage staff and a variety of routine operations. This kind of experience should be very helpful for the future of the men concerned and it is a method which has been tried at Bradford for the past three years.

Needs satisfaction

Needs satisfaction has been well expounded by Maslow[5] and his five 'levels' are widely known. The subject specialist is likely to be well on his way to satisfaction of his needs at all five levels. Physiological needs and safety needs are taken care of in most jobs and the third need, the need to 'belong', provides one of the first motivations he will experience in a new post. The fourth need, that of social status, is very important, and not simply for its own sake. It implies acceptance by others, and in the case of the subject specialist, this means within the library and, most important, *outside* the library, amongst the academic staff and students he is there to serve.

The subject specialist will have to work hard at this merely to be successful in his job and not as a means only of satisfying his own instinctive need. Motivation is therefore high; when he has achieved this acceptance, his social status need will have largely disappeared and he will be in a position to estimate his own rating *vis-à-vis* his need for personal status. This is a self-fulfilment need; this need is concerned with a man's continuing struggle to justify himself to himself. The better the man the harder the struggle. The really good subject specialist will find that, however much he achieves, there will always seem to be further possibilities. But it has been said with truth that there would be little point in life if all one's needs were satisfied.

Thus it can be seen that the subject specialist librarian can be a highly motivated man and it is the clear duty of the Librarian, as manager, to ensure that he has the opportunities and resources to develop both his work and himself, lest frustration set in.

Peter Woodhead[9] has carried out a comparative study of subject specialization schemes in three university libraries: University College London; Leeds; Bradford. Much of his information he obtained by personal interview with subject specialists, and he points to considerable dissatisfaction by about one-third of the librarians interviewed. Some of this dissatisfaction arises because the subject specialists cannot spend as much time on what Woodhead calls the 'creative' side of their work as they would like, because of 'the amount of routine work' they are required to do. In this way lies frustration. And when it is recalled that creativity is an essential part of the self-fulfilment drive that contributes to a man's attemps to satisfy his need for personal status (Maslow's top level), then it is easy to see why subject specialization schemes which are hybrids, in that they incorporate routine commitments, may contain the seed of their own destruction. (At least one library in the UK has abandoned its scheme in recent times.)

The future

The subject specialist librarian has already accomplished much in British academic librarianship. There is room for closer examination of the methods by which he attains his objectives and, as these methods are either traditional or, if not, are self-evident adaptations of existing routines to meet new demands or to utilize new services, perhaps closest attention might usefully be paid to the means by which he 'sells' his services. But this scrutiny warrants another paper.

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Communication about books to undergraduates

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THE RESEARCH reported in this paper is part of a general study of books which was begun in 1967 and which has been reported elsewhere, in two books and several papers.[1] The present study is about the communications between people in the universities who are concerned with the use of books by undergraduates; postgraduate students are excluded because they present different problems.

Books are *used* by undergraduates for their education, and therefore they are functional to courses of study. They play an important role in the educational process and if this role is to be successful there must be *knowledge* about books. For this knowledge to be transmitted there must be channels of communication between the people concerned with the use of books.

Five groups of people concerned in this communication network can be readily identified.[2] They are lecturers, librarians, booksellers, publishers and students. Whilst the separate functions of booksellers and publishers are recognized, they do together form the book trade and booksellers have the most *direct* contact with the other three groups. Figure 1 shows how there are twelve possible lines of communication between these four groups, since between any two groups there should be two-way communication; for example, from lecturer to student and from student to lecturer.

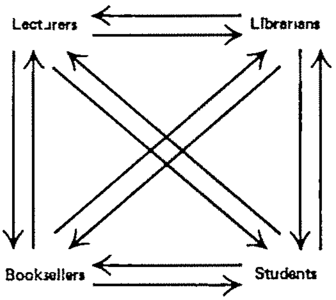

Fig. 1: Possible lines of communication

The diagram may seem to illustrate a fairly simple communication network, but in any given university it operates in an institution of great complexity.

In the University of Sheffield, for example, which is the case study discussed in this paper, the communications about books take place in an institution which had in the session 1971–72 (the year of the case study) over 600 full-time lecturing staff, nearly 5,000 undergraduates and over 1,000 postgraduates, 55 separate departments, 132 different subjects of study in degree syllabuses, 39 university libraries of various sizes and 2 main university bookshops (neither owned by the University).

Examples of communication lines

It is useful to consider some of the purposes for which communications about books are made between various people in the network.

Between *lecturers and students* there are important matters originating from the lecturers who have the responsibility for determining syllabuses and forms of teaching. Virtually all university courses are based on an expectancy of reading being done by students and so reading lists become a necessity. These may be long or short, curt or discursive and both lecturers and students may or may not take them seriously. In many courses these days there may be several lecturers teaching classes comprising different groups of students from various degree courses. In these cases considerable co-operation and co-ordination may be needed to produce good reading lists. Within the reading lists there will be some books which are more important than others and priorities may be indicated, perhaps with guidance on purchasing. Ideally there should also be feedback from students to their lecturers about inadequate stocks in bookshops and libraries, books which are not useful to students and books which students may discover though lecturers have not recommended them.

Between *lecturers and librarians* there should be a relationship between academic colleagues based upon a recognition of each other's expertise. The university library is still one of the most important departments of the university but it can only function correctly if there is constant interchange of information between lecturers and librarians, especially on new books to be ordered. If the librarian sees his job merely as a custodian of books then he will initiate little in the dialogue with the lecturer, but if he takes on the role of an out-going supplier of information then his status will be enhanced and he may play an important part in providing services for the courses taught.

Between *lecturers and booksellers* there is a commercial relationship as the bookseller needs accurate and realistic information, at the right time, if he is to provide books needed by undergraduates for the academic session. Stockholding bookshops are expensive institutions to finance and good liaison with departments and lecturers is necessary if the students are to be well served. Bookshops should therefore feed back information about out-of-print books, re-printing and so on, and annual figures of numbers of titles actually sold can be very informative for lecturers.[3]

Between *librarians and students*[4] there is a relationship which can only be successful if students know how to use the library services and appreciate what is available to them. At present much so-called library education is general and basic and does not extend either beyond the first year (or even first term) or into areas of subject specialization. Many librarians would like to develop library education but inadequate staffing precludes this, and lack of interest from lecturing staff does not help. Students frequently know little more than how to fill in a borrowing form and use the basic catalogue—if they can do even that properly. The enormous resources of libraries are wasted because of the lack of skills amongst students.

Between *librarians and booksellers* there is a relationship which should be (and usually is) quite businesslike and professional.[5] Both groups are concerned with the adequate provision of books for undergraduates and both are dependent upon the lecturers for information. Both groups, therefore, will suffer if information is lacking or unco-ordinated and interchange of information between them can be mutually advantageous. Most university libraries buy some of their books from local bookshops and this should bring certain members of their staff into frequent contact.

Between *students and booksellers* there is a clear commercial relationship of customer and shopkeeper. British university bookshops do not function in the American way of selling parcels of books for courses and 'browsing' is still encouraged. However, in the first few weeks of the academic year there is an enormous demand for course books and it is at this time that students expect to be able to buy needed books on the spot. If stocks are wrong or inadequate and further ordering must be done the students' enthusiasm drops very quickly. Bookselling is not a well-paid occupation and often the junior staff who come into personal contact with the customers are the weakest links in the booksellers' chain.

The University Institution

As has already been pointed out universities are complex organizations with large numbers of staff, students, departments and subjects of study. Degree syllabuses are far more complicated than many people outside a particular faculty may recognize. For example, one may think of a social science student as simply reading economics or psychology, but in fact at Sheffield University all first-year students in the Social Science faculty read three different subjects (as well as a compulsory statistics course) and when they proceed to second-year studies they have a choice of eight single subject schools, twenty-four dual subject schools and two triple subject schools into which they might go. In the Arts faculty the range is even greater: fifteen single schools, sixty-seven dual schools and two triple schools. In faculties such as Law or Medicine the choices are, not unnaturally, more restricted, but in Pure Science there are many combinations of primary and secondary subjects available. At the time of the survey there were eight faculties in all administering first degrees.

The organization of libraries is also very complicated. There is a large main library which also houses the principal library staff, and in addition there are good-sized branch libraries with permanent staff for the applied sciences, for law, for physics and mathematics and for chemistry. In addition to these there are many other so-called 'departmental' libraries run by academic teaching staff (often with volunteer student help) and in some cases the books bought come from departmental rather than library funds and stocks are not always catalogued in the main university catalogue. This *mélange* of professionalism and enthusiastic amateurism can lead to much overlap and often quite large numbers of copies of titles not selected by the University library itself. There is also in the main library a 'Reserve Book Room' which provides extra copies of much-needed books which can only be borrowed overnight and not removed during the day.

Survey procedure

The survey of the use of books by undergraduates at Sheffield University involved the author in many informal discussions with lecturers, librarians, publishers, booksellers and students as well as in collecting book lists issued by lecturers to students and to bookshops. During the Lent Term of 1972 questionnaires were sent to a sample of 1 in 5 of all undergraduates and stamped addressed envelopes were enclosed for reply. A response of 77 per cent was obtained, giving 763 usable questionnaires and the fit of the sample to the total undergraduate population by year of study and faculty was very good.
The questionnaire dealt with three major topics:

(1) The guidance about reading received from lecturers.
(2) The use made of university library facilities.
(3) The use made of bookshops for purchase of books.

The results of the survey are dealt with at length elsewhere,[6] but in this paper some of the main findings are brought out and related to problems facing university libraries.

Survey results

About 40 per cent of undergraduates were not very satisfied with the guidance given to them by their lecturers on reading. Just under a half of the students said they did not receive guidance from 'all' or 'most' of the staff who taught them. Over 40 per cent reported that they received printed reading lists from only 'few' or 'none' of their teachers. Of those who did receive printed reading lists over 40 per cent did not rate them as 'good'. Therefore about 40 per cent of the respondents seemed to have some degree of dissatisfaction about the guidance on reading given to them by academic staff. Yet when, at the end of this section, the students were given an open-ended question asking what suggestions they would make to improve the guidance from their lecturers, 46 per cent had no suggestions at all to offer.

Turning to questions on the use of the library, 15 per cent of undergraduates said that they did not use a library at all for private study and 16 per cent said that they did not use a library at all for the borrowing of books. Even late in the Lent Term, when the survey was made, 35 per cent of respondents replied that they did not have any books on loan from the University libraries at that time. Between 25 and 44 per cent of students in faculties which are catered for particularly by the Reserve Book Room said they had not used this service at all during the past term. The lack of use of libraries should be seen against the heavy teaching loads undertaken by students in Medicine, Engineering and Materials Technology, 80 per cent of whom had over 20 hours a week in class, and a small number having over 30 hours a week. Also 45 per cent of students did not rate library stocks in their subject as 'good' and over half reported some difficulty in obtaining books they wanted for essays or projects. Given these replies one might have expected massive criticisms of the library service, yet the open-ended question asking for suggestions was not answered by 47 per cent of respondents.

A student with a very large personal library might not need to make much use of borrowed books, but questions on book buying did not give an impression of great collections being built up. Although the nominal amount for 'books, stationery and equipment' in the DES standard grant for that session was £48, the average student-spending on books worked out at £16.80 and 4 per cent of respondents said they had spent nothing at all on books so far that session. The first-year students spent, on average, £20.84 on books; for the second-year the figure was £16.84 and for the third year it was £11.48. The faculty with the highest expenditure was Law, with £22.43, and the lowest was Architecture with £9.96. When asked if they had ever ordered a book not in stock at an academic bookshop, 37 per cent of students said they had never ordered one; this was not a response biased towards first-year students as 33 per cent of third-year respondents had never ordered a book. Not surprisingly over three-quarters of students thought that book prices were high or fairly high, but when asked for examples of expensive books which they had themselves bought 30 per cent of the complainants could not cite an actual title. Of those who did, some quoted books over £8 in price which were absolutely essential for their courses, and some students (particularly in Arts) cited books at or below £1 in price because they seemed to be poor value for money. When asked for suggestions for improving the bookshops 43 per cent of respondents had nothing to suggest.

Consideration of results

It would be very easy to draw the facile conclusion that many students are idle, do not want to study if they can avoid it, prefer mugging up lecture notes to reading books and prefer to spend their money on cigarettes and drink rather than on books. Certainly *some* students do fit into these categories but I personally believe that as a *general* conclusion these ideas are dangerously misleading.

Even though I have myself been an academic for over twenty years this research has taught me a great deal about the workings of the University and I think it is of fundamental importance to understanding the use or non-use of books to appreciate how much university courses differ from each other. Several students of mathematics and some technologists wrote on their questionnaires that they hardly needed books at all for their courses, as the lecturers wrote the problems and answers on the blackboard and if the student could follow the lecture and write down a good set of lecture notes he really had no need for books at all.

There were other technologists spending long hours in classes and practical workshop situations who said they had very little time for reading, and relied mainly upon one or two prescribed texts which would be referred to if they had any problems. Architects were said to use a great number of reports for their studio work, but not many books.

In pure science there were students who used text books to help them understand lectures, but by their third year some students referred almost wholly to journal articles and books were not much used.

Medical students had very heavy working hours, especially in their clinical years, but were also expected to use a lot of books to give them medical knowledge. For these students books were necessary but time was at a premium.

Law students were the greatest users of books, both by purchase and loan, since their courses were almost completely based on 'book learning'. Fortunately they seemed to have good guidance about reading from most lecturers, though where things went wrong they went disastrously wrong.

In some Arts subjects, especially the study of foreign languages, students made a great deal of use of set texts and critiques, and personal possession of books was common, though some departmental libraries did seem to stock very liberal quantities of set titles. In other Arts subjects, such as history and philosophy, there was little use of set texts and the situation was more akin to that of social scientists, such as sociologists, for whom text books as such were hardly ever used and some lecturers' reading lists seemed to be more like definitive bibliographies on a subject rather than undergraduate reading lists.

Thus it is clear that the way in which books are used is related to subjects of study, and that there is a great deal of variation in this.

Turning to the opinions of the students themselves it is clear that many of them are moderately dissatisfied with their lecturers' guidance on reading, with their library facilities and with the local academic bookshops. But the students seemed to have done very little about this dissatisfaction. Few students had ever suggested books to their lecturers or seemed to have complained *to them* about poor reading lists or no lists at all. Few had any useful suggestions for improving the library service or the bookshops. The student representatives on the library committee are not noted for their militant behaviour and the students' union has not been known to call mass meetings on any of the topics of this paper.

Two explanations for this inertia can be offered. The first is the very simple one that students do not fail their degrees in any great numbers at Sheffield University and so the situation described in this paper is, in fact, satisfactory to them. The second point is that the survey showed that many students cannot offer brilliant suggestions for improving lecturers' guidance, library or bookshop services because they do not know enough about them to offer anything beyond elementary suggestions like 'Reduce the loan periods and get more books on the shelves' or 'Lecturers should tell the bookshops what books students will buy'.

Until undergraduates become more aware of their own ignorance and what they are *missing* in their university years because of this there is little likelihood of any great activity from that quarter. If lecturers do not have to stir themselves and students do not have to use books any more and yet degree results continue as they are, why should anyone stick his neck out and ask for more work? University librarians *must* know how the services and resources which they can (or could) offer could improve the quality of undergraduate education had they but the chance to devote more time to education in the use of the library, reader services and the like. But all librarians know how few academics are *really* interested in the potential which the university library offers, and most university libraries still seem to be treated as ancillary departments rather than integral parts of the university. In these days when even small academic departments seem to be able to justify two professors and a clutch of senior lecturers it is remarkable how low in status most university library staff are graded.

I would therefore conclude this paper with a plea for greater militancy on the part of university librarians. I would like to see more subject specialization take place, library representatives on all faculty boards and even departmental committees. I would like to see more good *general* library education for first-year undergraduates and highly detailed *subject* education from second year on. I would like to see lecturers and librarians working together in the development of lecture courses so that all the resources of the library can be brought in to improve the quality of the education given to the students.

If these pipe dreams were to come true I believe that many more students would actually *enjoy* the courses they study and that lecturers would be amazed at the services offered to them by their library colleagues. But these are conclusions which I have only myself reached after more than two years' research into the use of books by undergraduates; some of my as yet unawakened academic colleagues are still uncertain where the library is. I feel that too many university librarians are still far too diffident about their own knowledge and expertise. I would not ask librarians to treat the academics as equals—why not treat them as inferiors?

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Letters to the Editor

Sir,

In *Aslib Proceedings*, Vol. 26, No. 2 (February 1974), pp. 69–73, there was published an article, 'Map conservation in an academic geography department', by A. J. Bird. On page 71, the author states: 'Therefore, in such a map library, there is only one system which allows free access to any one map in any series, which is to hang the maps vertically with their titles and/or numbers at the top as is done by the Royal Geographical Society and a few others'. Had the author ever made contact with the Society he would know that such a system is not used in the Society's Map Room and that we have consistently advised against its use. Our current standard practice is to keep maps flat in steel plan presses fitted with shallow drawers 40 mm. deep. It is true that our resources have been insufficient as yet to provide these presses for our entire collection of over 500,000 maps; we still have a number of old wooden plan presses and some vertical filing cabinets which are used for very large series of relatively small maps, such as the Ordnance Survey Six-Inch series, and for maps received by us in folded form. Whenever possible, folded maps are, however, opened and stored flat. Since the Royal Geographical Society's Map Room is well known, I would be grateful if you would publish a correction to the statements made by Mr Bird as soon as possible.

Apart from the reference to this Society, Mr Bird's article is misleading in its title. The article discusses map storage, cataloguing and similar problems but makes no reference to its title subject, 'Map conservation'. Problems of map conservation are many and are difficult to solve; useful articles on the subject are always welcome. It is most unfortunate that Mr Bird's article, published under your auspices, contributes nothing at all.

It may be useful to add some comments on the problems discussed by Mr Bird and his solutions. Map Collections fall into three very rough categories; reference collections such as the British Library (formerly British Museum), the Bodleian and our own small counterpart; working collections such as those maintained by commercial map publishers and the Ministry of Defence; and teaching collections, necessary adjuncts to Departments of Geography. Maps in reference collections require most attention to storage and conservation since their contents are required to remain usuable for an indefinite period; maps in working collections are for the most part modern and when superseded are generally no longer required; maps in teaching collections, often in sets, are mostly modern and usually replaceable when worn out. My comments are, of course, only broad generalizations! Maps in teaching collections suffer the most wear, since they are frequently handled by untrained users; it may even be considered desirable for students to take out the maps they need and replace them in the collection, which is likely to be relatively small in terms of different maps.

Storage and filing systems will differ for each category of collection and with the space available. For teaching collections where floor space is restricted, the collection is small, and ease of access important since most of the maps will be in frequent use, vertical filing, as advocated by Mr Bird, has some advantages. It has many disadvantages: time and money must be spent on provision of edge binding on the top of each map; this binding distorts the shape slightly and takes up storage space; as quoted by Mr Bird, about 1,000 maps is the limit for each cabinet as compared with over 3,000 for a 32-drawer plan-press, occupying perhaps twice the floor space, but not twice the operating space. Mr Bird claims less risk of deterioration risk with vertical filing, but it is to be noticed that he does not advocate its use for historic maps or 'first editions'.

Mr Bird's storage plan for rolled wall maps would also seem to be limited to a very small collection; one hundred wall maps stored in the manner he suggests would present serious handling problems.

The publication of this article by Aslib is surprising. For many years Aslib and the British Cartographic Society have run joint courses for map curators. At each of these, lectures on map storage are given and problems discussed; a wide selection of lecturers is available, any one of whom could write a really useful article on map storage and filing systems. 'Map conservation' is, as I have stated, a totally different subject; information on it is best provided by accepted experts.

Yours faithfully,
R. A. GARDINER
Keeper of the Map Room, Royal Geographical Society

Sir,

I would indeed be grateful if I may seek your approval in replying to various criticisms in a letter dated 18th April 1974 sent to you by Brigadier Gardiner, Keeper of the Map Room, Royal Geographical Society. These relate to my article which you published in *Aslib Proceedings*, Vol. 26, No. 2 (February 1974), pp. 69–73, entitled 'Map conservation in an academic geography department'.

The main objection appears to be my phrase 'as is done by the Royal Geographical Society'. Whilst I advocate vertical filing in such a map library (the subject of this paper), Brigadier Gardiner appears to disown such a system for the R.G.S., and states categorically that 'such a system is *not used* in the Society's Map Room' and that 'we have consistently advised against it use'. Why, then, as he states, have they some vertical filing cabinets which *are used* for O.S. Six-Inch series, among others as implied? The reason seems to be obvious in that the emphasis in the R.G.S. collection is on maps of a 'historic' status in its widest sense, rather than those of a 'teaching' type whereas our Map Room collection in the article shows the reverse emphasis. He is, in fact, concurring with the system I am advocating here, by using my system for the same, but relatively smaller, numbers of maps in common use, as required here. Therein lies the difference between a Keeper and a Curator of maps. The R.G.S. and this Department are both concerned with 'conservation' in one form or another, the former conserving its maps in as near to 'mint condition' as possible, and the latter for as long as possible, having regard to everyday usage here, as declared in the opening summary and the first paragraph of the Introduction. The article quite clearly states that it applies only to the Map Room, Geography Department of the University of Wales at Aberystwyth, and in no way is it intended to be a treatise on the overall study of the conservation problems encountered nationally or globally. Every aspect discussed in the article surely forms part of conservation discipline practised in this department, exactly as the title announces, and to other institutions, similarly placed and with similar map material, it is intended to bear witness to its practicability with results; that is the contribution it makes.

Ignoring the first two of Brigadier Gardiner's map collection categories as being irrelevant to the article, he agrees with me that teaching collections are 'usually replaceable when worn out' and 'suffer the most wear'. This is precisely what this article is intended to show—how to delay replacement and reduce wear to the minimum. This will certainly never be achieved, if, as he hints may be desirable, students are allowed to take out and return maps to the cabinets themselves. This is above all the curator's prerogative alone, and here the Map Room is locked in the absence of the curator. It was found at the outset that maps were replaced in the wrong racks (e.g. SH grid misread for SN), maps dropped were put back anywhere. Frustration and/or impatience by such users caused confusion and certainly deterioration. One cannot imagine the result in allowing this if maps were stored in drawers. The R.G.S. 40 mm. deep drawers contain an average of 100 sheets, and the taking out of the 99th map would certainly involve disarray and at the least some creasing on replacement. Again, where is one to put the overlying 98 maps while extracting the 99th. This exercise could even have be to repeated perhaps ten times in one drawer on behalf of a user requiring the Six-Inch maps to cover the entire river system from source to mouth in a hydrological study. Vertically stored, three minutes only is required to extract the ten, which I doubt would be feasible by any 'accepted expert' from a 32-drawer plan-press, probably from the foothold of a step ladder.

As regards the claim that binding slightly distorts the shape of the map, this has certainly never occurred with a newly received map, if flattened in the way stated. One does get slight distortion in maps that have hitherto been kept rolled for long periods, or in maps that have 'bruised' edges, due to being formerly kept in drawers, where they are continually 'battered' against the drawer walls on opening and closing, and by handling to extract them. Both disadvantages are obviated in the vertical system, where one only handles the bound protected edge reinforced by the tape. The claim that binding takes up storage space may be discountered, since there is only 1 mm. increase per 100 maps on the bound edge, which is gripped by the jaws of the rack. As the other three map edges are free to fan out under their own gravity, this hanging edge is the only determining factor involved in the capacity of each rack, whereas, when stored horizontally in drawers, all four edges must be considered. I feel that Brigadier Gardiner may not have appreciated the type of tape used. This is only affixed along one surface of the map edge, and not over both surface edges.

As emphasized in my article, I do not advocate vertical binding for historic or 'first editions', unless one foolishly wishes to sacrifice their values as 'collectors' pieces'. They do not here strictly form a unit within the teaching reference collection, but have been 'inherited' by the Department over the years, and must be housed, each sheet in its original publication form. They were obviously only referred to, in the event of the question being raised by readers, who could assume that we were so foolishly complacent as to mutilate them in hanging by affixing irremovable tape and by punching holes in them.

I disagree that our storage plan for rolled wall maps is either limited to a small collection, or presents a serious handling problem. In the alcove referred to, which measures 5 ft by 2 ft 3 ins, are 96 maps (12 rows of 8 each), all visibly numbered at eye-level. The list of these maps is kept adjacent to them, and their coded numbers noted by each. The whole collection of these is grouped into the World and its major Regions. One minute only is required to obtain a requested map. In conclusion, Brigadier Gardiner refers to lectures and lecturers as being available for curators. This is, indeed, highly commendable and has not remained unnoticed or appreciated—with one proviso, however, that, while such personnel may be able to expound their ideas theoretically, such theories would be greatly enhanced by expertise, commonsense and personal practical work. It would appear that Brigadier Gardiner has read the article text rather cursorily and, in so doing, has attempted to apply opinions and criticisms which are quite irrelevant to this geography department map collection system, which the article has shown to work efficiently and economically, and which Aslib decided to publish in the interests of humble map curators, working single-handed under similar circumstances and with ecomonical limitations. It is particularly heartening to know that, on his own admission, Brigadier Gardiner uses the vertical cabinets for maps of the O.S. Six-Inch series and similar types, exactly endorsing my recommendation for conserving our collection, which is mainly concerned with the same types, as he will note from the *Map and Atlas Collection Catalogue*, which I compiled, published by this Department in 1972, a copy of which was sent to him.

Yours faithfully,

A. J. BIRD

Map Curator, Geography Department, University College of Wales, Aberystwyth

Sir,

I regret that my letter of 18th April did not make quite clear the nature of the 'vertical filing cabinets' which are still in use at the Royal Geographical Society. They are of two types: normal office-type four-drawer foolscap size metal cabinets, which we find convenient for storage of folded maps, and a number of special large two-drawer cabinets, no longer being made, which are large enough to take early series of Ordnance Survey Six-Inch maps, unfolded, filed vertically, but *not* hung. The Ordnance Survey Six-Inch series are printed on heavy weight paper which permits this treatment.

The Society is nearly 150 years old; many of our map presses are at least half that age. Our continued use of old storage equipment is due to lack of funds, not a firm belief in its superiority. However, we have always advocated that maps should not be hung, even if reinforced along the hanging edge.

Yours faithfully,

R. A. GARDINER

Sir,

I am grateful to receive Brigadier Gardiner's clarification of the vertical filing cabinet types in operation at the R.G.S., and do appreciate the '*Raison d'être*' for the equipment in operation there. There are, of course, other types of hanging cabinets, which even I would not advocate for our own particular map material, one of which has two 'prongs' only, and the cabinet opens on a 'hopper like' principle. Unless bolted securely to the floor, the whole cabinet could over-balance onto the operator with the weight of the contained maps; out of the question where one has to re-position cabinets from time to time. I therefore agree that, particularly for the kind of material which the R.G.S. handles, Brigadier Gardiner is quite right in not advocating the 'hanging' principle. But these views, however, are irrelevant and not justified in the conservation and consultancy problems in which I am involved. The title of the article, therefore, as explained in the summary and text, only deals with a '*modus operandi*' applicable to an academic geography department which has proved successful since 1965, and which system could, wholly or partly, be adopted by institutions in similar circumstances.

In short, Brigadier Gardiner and myself are conserving two distinct categories of maps of differing usages. He is quite right in advocating his own system to his own category, but he implies that my system is not to be advocated for my category, because it does not conform to his own system and material. His statement that 'we have always advocated that maps should not be hung' is, in my view, far too dogmatic and peremptory, if he intends it to be applied to all maps in every collection.

Yours faithfully,

A. J. BIRD

Sir,

Mr Standley's letter (*Aslib Proceedings*, February 1974, p. 90–1) draws attention very properly to the great difficulty of providing library and information staff with adequate training owing to the lack of suitable day-release courses.

Your readers should be interested in our experiences during the first year of the two-year day-release SCOTEC course in Information Science which was explained in SLAN May–June 1973, p. 259–61. We began with 9 students, 3 being honours graduates (Geology, Mathematical Physics and Zoology respectively) 5 having an HNC or professional qualification, and 1 Scottish Highers. Of these students 3 work in the hospital or pharmaceutical service, 4 in University or College libraries, one in a nationalized industry and one in private industry. These students quickly formed an 'invisible college' of their own and the Institute of Information Scientists gained some new student members and increased attendance at their Scottish meetings. All the students agree that they have found their studies very enjoyable (these include statistics, systems, a foreign language, editorial work as well as indexing and sources of information) and relevant to the work they do. Attendance has been very good all session and the end of session examinations due this week, to be followed by an assessed week of research at Boston Spa, promise good results.

I can only add that all concerned in this course thoroughly recommend the day-release experience for library and information workers, who will, we are sure, gain very great benefits both for themselves and their employers.

Yours faithfully,

JOHN BATE

Head of Department of Library and Information Resources,
Napier College of Science & Technology, Edinburgh

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BRIEF REVIEWS

FISK, M. *ed.* Encyclopedia of associations; vol. 1. national organizations of the United States. 8th ed. Detroit, Mich., Gale, 1973. 1,546 pp. $45.00.

For some time the coverage of this directory has been considerably broader than the title indicates. Although the majority of entries are for non-profit American membership organizations certain non-membership organizations are included, also groups national or international in other countries, of particular interest to Americans or with a large American membership. Certain local and regional groups and citizen action groups are also listed. A final section lists inactive or defunct organizations together with former names of existing organizations. This edition, including over 1,200 new entries, contains details of over 17,000 associations. The form of entry remains the same as that of the previous (1972) edition and includes beside the name, address and telephone number, the founding date, previous names, name of chief official and numbers of staff, members and groups. A brief description of aims, etc. is generally included together with details of committees, sections and divisions which expand the information on the activities of the association. Titles of publications, names of affiliated organizations and details of regular conventions or meetings complete the entry.

The usefulness of such a publication depends not only on the coverage but also on the ease of accessibility to entries. An alphabetical/keyword index provides the first line of approach and an attempt has been made in this edition to assign a keyword for the broad subject area of interest. For example, the American Bryological and Lichenological Society (ABLS) indexed in the previous edition under 'American', 'Bryological' and 'Lichenological' is indexed in the present edition also under 'Botany'. In the main body of the work entries are listed within broad subject areas, alphabetically by principal keyword. It has been considered helpful to disperse under other main subject headings, in this edition, entries which appeared under Horticultural Organizations and General Organizations in previous editions. In the example cited, the ABLS is filed under 'Botany' in the Scientific, Engineering and Technical section rather than under 'Bryological' in the Horticulture section in the previous edition.

This directory has already proved its worth to all concerned in tracing information of any kind on American associations and the changes in this latest edition should help those searching for organizations in a particular subject field, by grouping subject-related organizations together.

Chemical Industry Directory 1974. Benn Bros., 1974. £11.50. (ISBN 0 510 48707 6).

Directories for the chemical industry tend to proliferate yearly and to suffer from inevitable limitations on comprehensiveness and currency: the reorganized 1974 edition of the well-established *Chemical Industry Directory*, however, is probably one of the most useful runners in the field.

For the first time the A–Z and classified list of manufacturers and suppliers of chemicals, chemical plant and equipment include UK and overseas (European) companies. The trade names list also includes names used by foreign companies. The directory is, however, principally concerned with the industry in this country, and the group of special UK listings includes information often difficult to trace in other sources. There are separate lists of UK chemical manufacturers and contractors giving head office and works addresses, directors, technical personnel, no. of employees, range of products and services offered, subsidiary and associate companies; UK traders in chemicals and chemical plant and equipment showing products handled and companies represented; professional and trade organizations with their branches; government department and state enterprises concerned with the chemical industry, their functions, activities and names of officials; industrial research associations; and chemistry and allied departments of British universities. The Directory is completed with a 'who owns whom' for the industry in Britain giving names of concerns operating in the UK grouped with their subsidiary and associate companies, a list of independent consultants with an alphabetical subject index to their interests, and a 'who's who' of people in the professional and commercial fields of chemicals, chemistry and chemical engineering.

For those working in the chemical industry the value of finding such diverse information under one cover is undoubtedly an advantage.

WHITE, C. M. *and others*. Sources of information in the Social Sciences: a guide to the literature. 2nd ed. Chicago, American Library Association, 1973. 720 pp. $25.00. (ISBN 0 8389 0134 4).

This is a revised and updated version of the first edition, which was published in 1964. The new edition contains an additional chapter on Geography, and an enlarged contents list with fuller details of each chapter. The index contains entries for author, title and subject. The amount of literature covered in this edition is much greater than the earlier edition and the introduction to each chapter is considerably longer.

Basically each chapter consists of an explanation of the subject concerned, *e.g.* Economics and Business Administration followed by sections containing details of literature on aspects of the subject. Each chapter also contains sections under the following headings: Guides to the literature, Reviews, Abstracts and summaries, Current bibliographies, Directories and bibliographical information, Encyclopedias and encyclopedic sets, Handbooks, Yearbooks, Statistical sources, Sources of scholarly contributions, and Sources of current information. The literature covered is mostly American, but some British and European material has been included.

Although this second edition only includes books published up to the end of 1972 it is a welcome replacement to a very useful guide.

LIBRARY ASSOCIATION. Professional and non-professional duties in libraries. 2nd ed. LA, 1974. 86 pp. £2.25; LA members £1.80. (ISBN 85365 307 0).

The book describes both professional and non-professional duties of librarianship and is of value to governing bodies and administrators. It gives an idea of the qualities, knowledge and experience necessary for different spheres of library work.

Arranged on a functional basis, similar duties which can be performed in all types of libraries are grouped together. Each chapter describes professional and non-professional duties separately. The list is useful as a basis for job analysis and will be helpful in disclosing overlapping functions or uneconomical use of professional time.

In this second edition every duty listed in the first edition (1962) has been systematically reconsidered and the overall structure of the chapters revised. The growing use of newer forms of material, particularly in the audio-visual fields, and specialization in selection of material and information work are included.

MANN, P. H. Students and books. Routledge, 1974. 213 pp. £4.25. (ISBN 0 7100 7850 1.)

The book is based on a study of a sample of undergraduates at the University of Sheffield to discover what guidance on reading British university undergraduates receive from their lecturers; the use they make of their university libraries; and the amount of money they spend on their books. The author considers possible communication links between four groups of people concerned with books—lecturers, librarians, booksellers and students—and shows how some of these links are more frequently used than others. Statistical tables with analyses by years of study and faculty are given, and the work includes quotations taken from comments made by the students themselves.

MEKEIRLE, J. O. Guide to information sources on environmental science and technology. Antwerp, Flemish Economic Association, 1974. 230 pp. $20.00.

This very useful guide contains annotations concerning more than 470 books, 280 periodicals, 130 reference books, over 100 individual bibliographies and nearly 100 current secondary literature sources. Part I is in seven sections dealing with books, periodicals, technical reports, conference proceedings, dissertations, patents, and standards and specifications. Part II contains four sections dealing with secondary sources; reference books, bibliographies, information surveys, and abstracts and indexes. Part III contains a helpful sample of copies of pages from leading abstract journals. The guide is intended for scientists and engineers concerned with environmental pollution, particularly those in industry facing increasingly wide and determined legislation. The inclusions are international, reflecting no bias of nationality or language, and the publishers have every right to be pleased with their effort and to hope and expect for sales outside their own country.

EVANS, L. Methods of ranking SDI and IR outputs. London, Institute of Electrical Engineers, 1973. 22 pp. £1.25. (1) ISBN 085296 420 X.

Evans reviews briefly various methods for ranking document references output by SDI or information retrieval systems. He includes systems which weight terms at searching and those which weight terms as part of the indexing or document description stage. Relative merits of automatic and intellectual assignment of weights are discussed. Eight ranking methods are described which have been selected from those surveyed for investigation by INSPEC on its own files. The suitability of various methods for the INSPEC indexing system is mentioned.

The problem motivating such an investigation will be recognized by anyone who has received a large number of references from a computer-based retrieval system. However this survey is most likely to be of interest to designers and operators of such systems. The survey has the advantages of being short, intelligible, and containing a minimum of technical jargon and formulae.

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Directory of Operational Computer Applications in United Kingdom Libraries and Information Units

Edited by C.W.J. Wilson

£5.00; £3.50 members SBN 85142 054 0

After the Aslib Computer Applications Group came into existence in 1968 it set up a number of Working Parties. One of these, the Acquisitions, Cataloguing and Circulation Working Party (ACCWP), came to the conclusion that there was a real need for a directory of operational computer applications in United Kingdom libraries and information units. There have been previous surveys but these were partial, incomplete and in some cases did not always distinguish what was operational from what was planned or experimental.
The Directory is in three sections. First is a section in which it is possible to read off which libraries have particular applications. This is followed by a list of the libraries in alphabetical order, with their contributions. The third section is an index to named equipment, information systems, data bases and any other useful topics.

The Corporate Approach to Library Management

Proceedings of a one-day conference for chief librarians from local authority and educational institutions 22 June, 1973

Edited by P.A. Thomas and Valerie A. Ward

£3.00; £2.00 members SBN 15142 056 7

Aslib R & D Department is engaged in a research project, Librarians as Managers.
In the course of the investigations the increasing pace of management and organizational change became apparent. Both public and educational libraries are affected by recent developments within their parent organizations. Local authorities are going through a period of considerable upheaval and Polytechnic librarians are developing integrated services from previously separate college libraries.
Some librarians have already played an active role in planning for organizational change, and in applying modern management principles, many more will shortly be involved in such endeavours. It was thought that senior staff could well benefit from an opportunity to discuss the problems involved, and this publication is the proceedings of the conference that was arranged.

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Proceedings of the Conference of the National Official Publications of the Countries of the EEC, London 16–18 April 1974

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Aslib Proceedings

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European National Official Publications

Proceedings of the Conference on the National Official Publications of the Countries of the EEC, London, 16th–18th April 1974

Edited by

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Preface

DUE TO SPACE LIMITATIONS, certain of the papers have been abridged from the preprints which were circulated to delegates. In general, however, only background, historical and repetitive material has been omitted. On the other hand, translated texts have been augmented to some extent by the addition of native titles of publications and names of institutions taken from the original papers. In some instances the textual translations themselves have been modified. The aim throughout has been to ensure that each contribution to the stated objectives of the conference is accurately reported. Nonetheless, some useful digressions—for example on definitions and on advanced techniques of publishing and documentation—have also been included.

John E. Pemberton
Buckingham, 18th June 1974

Introduction

THE CONFERENCE on the National Official Publications of the countries of the EEC was organised by Aslib with the co-operation of the Aslib Social Sciences Group and with financial help, gratefully acknowledged, from the British Council towards the expenses of overseas speakers. The Conference was held at the London Graduate School of Business Studies from 16th–18th April 1974, and was attended by 114 delegates from 12 countries.

In welcoming the delegates, Mr J. E. Pemberton (Chairman of the Aslib Social Sciences Group) said that this was the first occasion on which experts from each of the member countries of the European Economic Community had come together to study and exchange views on their respective national official publications. He expressed the hope that it would prove to be a seminal conference from which further initiatives would spring.

Each of the speakers, one from each EEC country, had been asked to prepare a paper describing his or her country's national official publications, indicating the main categories of papers, related indexes, methods of obtaining the material and libraries holding good collections. English-language preprints were circulated to all participants.

During the course of the conference delegates attended a reception at the King's Library in the British Museum and visited the House of Commons Library and the British Museum's State Paper Room.

Chairmen of sessions were Mr D. A. Clarke (Librarian, British Library of Political and Economic Science), Mr E. J. Miller (Superintendent, State Paper Room, British Museum) and Mr J. E. Pemberton (Librarian, University College at Buckingham).

Directory of Operational Computer Applications in United Kingdom Libraries and Information Units

Edited by C.W.J. Wilson

£5.00; £3.50 members SBN 85142 054 0

After the Aslib Computer Applications Group came into existence in 1968 it set up a number of Working Parties. One of these, the Acquisitions, Cataloguing and Circulation Working Party (ACCWP), came to the conclusion that there was a real need for a directory of operational computer applications in United Kingdom libraries and information units. There have been previous surveys but these were partial, incomplete and in some cases did not always distinguish what was operational from what was planned or experimental.
The Directory is in three sections. First is a section in which it is possible to read off which libraries have particular applications. This is followed by a list of the libraries in alphabetical order, with their contributions. The third section is an index to named equipment, information systems, data bases and any other useful topics.

The Corporate Approach to Library Management

Proceedings of a one-day conference for chief librarians from local authority and educational institutions 22 June, 1973

Edited by P.A. Thomas and Valerie A. Ward

£3.00; £2.00 members SBN 15142 056 7

Aslib R & D Department is engaged in a research project, Librarians as Managers.
In the course of the investigations the increasing pace of management and organizational change became apparent. Both public and educational libraries are affected by recent developments within their parent organizations. Local authorities are going through a period of considerable upheaval and Polytechnic librarians are developing integrated services from previously separate college libraries.
Some librarians have already played an active role in planning for organizational change, and in applying modern management principles, many more will shortly be involved in such endeavours. It was thought that senior staff could well benefit from an opportunity to discuss the problems involved, and this publication is the proceedings of the conference that was arranged.

3 Belgrave Square London SW1X 8PL

Aslib Publications

National official publications of Belgium*

Frans Vanwijngaerden

Chief, Belgian International Exchange Bureau

WHEN MY DIRECTOR, Mr H. Liebaers, addressed the participants in the 37th IFLA General Council, held in Liverpool in 1971, he warned his audience to be very careful in using the words 'developing countries'; words which have become so deeply rooted in the present-day vocabulary of international relations that they cannot be avoided completely. The example of his own country, he said, would be enough to prove that even rich countries can be underdeveloped in library matters.

I could not help recalling his words when I started preparing my paper on the official publications of Belgium. Please do not think that I consider myself a citizen of an underdeveloped country or that everything is going wrong in Belgium. I only mean that with regard to official publications something ought to be done to improve the present situation, which is often very complicated and confused.

After these rather pessimistic introductory words, I am very glad to be able to point out that in the first years of the foundation of Belgium, about the year 1835, official publications were highly appreciated, especially statistical publications. In proof of this, the following publications can be quoted:

> HEUSCHLING, X, Aperçu des principales publications statistiques faites en Belgique, depuis l'incorporation de ce pays à la France en 1794 jusqu'à ce jour, *Bulletin de la Commission centrale de statistiques,* 1, 1843, p. 579–614.
> Publications statistiques officielles de la Belgique de 1830 à 1912, *Annuaire statistique de la Belgique et du Congo Belge,* 42e année, 1911, p. CXIII–CXXXIII.

Belgian official publications were once very popular in German universities, and the Belgian Government therefore put at the disposal of Baron Frédéric de Reiffenberg, who from 1837 to 1850 was the first director of the Bibliothèque royale de Belgique, several copies of all Belgian official publications, to send to those German universities with which the Bibliothèque royale had made exchange arrangements. In those times the term 'official publications' covered much more than it does now, and comprised for instance all publications of academies, learned societies and museums.

Baron de Reiffenberg's successor, Louis Joseph Alvin, who directed the Bibliothèque royale from 1850 to 1887, at first extended these exchanges, but was soon forced to discontinue them, owing to under-staffing and to lack of sufficient exchange material.

The importance of official publications as tools for educators, researchers and policy makers was stressed in the past by several initiatives which aimed at creating international organizations for the exchange of books and works of art.

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* This is an abridged version of Mr Vanwijngaerden's paper.

At the Universal Exhibition in Paris in 1867, for example, the South Kensington Museum of London showed reproductions of works of art from a number of foreign countries. The success of this innovation was so outstanding that H.R.H. Albert Edward, Prince of Wales, persuaded the fourteen princes of the European reigning families present in Paris at that time to sign what became known as the Convention of Princes for promoting universally reproductions of works of art for the benefit of museums of all countries.

I emphasize this event, because it forms the basis of the principles which still govern the exchange of Belgian official publications with our foreign exchange partners.

In pursuance of the Convention of Princes a commission for exchange was constituted in England in March 1868 and the Prince of Wales invited his co-signatories to imitate the English example. Belgium was the first country on the Continent to comply with this request and a commission was set up in 1871 with instructions to arrange between Belgium and foreign countries an exchange system for art, scientific and literary publications and for reproductions of the most important monuments and objects of art. The task assigned to the Belgian commission was, as you see, much wider than what was suggested by the Convention of Princes in 1867, which limited all activities to the domain of fine arts and omitted literature and science.

The Literary Section of the Commission started working at once and decided that their most important task was the production of a list of all Belgian scientific and literary periodicals. This *table générale* was drawn up in 1873 and published in 1875 under the title *Introduction à la bibliographie de Belgique. Relevé de tous les écrits périodiques qui se publient dans le royaume par les sociétés savants, les administrations publiques, les associations et les particuliers.*

The Literary Section of the Commission also contributed to the agreement between the Belgian Government, the Bibliothèque royale and the publishing firm of H. Manceaux in Brussels to bring out the *Bibliographie de Belgique/Belgische Bibliografie* from 1st January 1875.

On 12th August 1875 a Congress of Geography was organized in Paris and the Secretary of the Belgian Literary Section, Mr Charles Ruelens, was delegated as Commissioner by the Belgian Government. He persuaded the representatives of 17 countries present in Paris to sign a manifesto, aimed at organizing 'dans chaque pays un bureau central chargé de réunir les publications cartographiques, géographiques, etc., éditées aux frais de l'Etat, et de répartir ces publications entre les différentes nations qui ont adhéré au présent programme'. A big step was thus made in the matter of international exchange. A set of regulations was drafted by the French Commissioner, Baron de Watteville. Belgium signified its approval to this set of regulations by a Ministerial Order of 9th September 1875. The draft regulations aimed at furthering exchange relations between countries by establishing in each contracting state a bureau responsible for exchanges. Each bureau would prepare a bibliography of the official publications of the last few years which it was prepared to exchange, and the exchange would be free of charge. Belgium and France soon started exchanging their official publications.

International conferences were subsequently organized in Brussels in 1877, 1880 and 1882 and resulted finally in the two Brussels conventions of 1886 for the international exchange of official documents, scientific and literary publications between Belgium, Brazil, Italy, Portugal, Serbia, Spain, Switzerland, and the United States of America.

The Service belge des échanges internationaux is still working along the lines of the Conventions of 1886. It receives 30, 60 or more copies of the most important official documents. At least once a month copies of the official journal, parliamentary papers and documents are sent to 58 libraries, exchange centres and institutes in 36 countries. Under the terms of these Conventions the Service belge des échanges internationaux also sends all available official and semi-official publications to 53 libraries, exchanges centres and institutes in 45 countries.

L. Alvin and Ch. Ruelens, of the Exchange Commission compiled an *Introduction à la Bibliographie de Belgique. Relevé de tous les écrits périodiques qui se publient dans le royaume par les sociétés savantes, les administrations publiques, les associations et les particuliers,* which was published in 1875 in Brussels by Henri Manceaux.

In 1905 the Service belge des échanges internationaux published a *Liste des ouvrages en magasin, ainsi que des publications pouvant être mises à la disposition des bureaux étrangers par les différents départments ministériels.* The second part of this list (p. 48–55) gives a survey of publications of the ministries, academies, Record Office, Royal Library, four commissions and two museums. The list is incomplete, because only works available for exchange are recorded.

A further advance was made in 1912 when the Commission royale belge des échanges internationaux, section littéraire published a *Liste des documents officiels de la Belgique. Parlement, Ministères, Provinces, Communes, Institutions et Etablissements officiels.* The list excludes the publications of learned bodies and scientific societies, but includes periodicals and non-periodical publications after 1900 and gives a complete survey of official publications from 1831 to 1911.

After 1912, official publications seem to have lost all interest: the First World War, 1914–18, is probably in part responsible for this. In the 'fifties, however, documentalists and librarians again became aware of the fact that government publications are a great storehouse of information. This was especially the case in the Ecole provinciale de Bibliothécaires du Brabant, which encouraged its students to compile bibliographies of government publications. The following dissertations were submitted for graduation:

DE RUYCK, JULES Bibliografie der overheidsuitgaven van het Ministerie van Openbare Werken, 1952.

VAN DEN EEDE, HECTOR Proeve van een bibliografie der overheidsuitgaven van het Ministerie van Openbaar Onderwijs, 1952.

QUINTYN, FRANS Proeve van een bibliografie der overheidsuitgaven van het Ministerie van Economische Zaken en Middenstand, 1954.

VAN DEN BOGAERT, AUGUST Proeve van een bibliografie der overheidsuitgaven van het Ministerie van Arbeid en Sociale Voorzorg, 1954.

Unfortunately the series was not continued and I am told that the students are no longer interested in government publications.

In 1957 the Commission belge de Bibliographie. Sous-commission de la Commission nationale pour l'Unesco published, as No. 22 of its series 'Bibliographia Belgica', Mr Gh. Keppene's work *Les publications périodiques éditées par les services centraux des ministères (1954)*.

From 28th May to 7th June 1958 an inter-governmental meeting of technicians and experts on the exchange of publications was convened in Brussels by Unesco in collaboration with the Government of Belgium to bring about a new Convention concerning the International Exchange of Publications, and a new convention was adopted by Unesco on 3rd December 1958. Article 2 of the Convention, concerning the exchange of official publications and government documents, defines official publications as follows:

> 1. For the purpose of the present Convention, the following are considered official publications and government documents when they are executed by the order and at the expense of any national governmental authority: parliamentary documents, reports and journals and other legislative papers; administrative publications and reports from central, federal and regional governmental bodies; national bibliographies, State handbooks, bodies of law, decisions of the Courts of Justice; other publications as may be agreed.
> 2. However, in the application of the present Convention, the Contracting States shall be free to determine the official publications and government documents which shall constitute exchange material.
> 3. The present Convention does not apply to confidential documents, circulars and other items which have not been made public.'

Unfortunately, for reasons which are unknown to me, Belgium has not yet ratified the Unesco Convention. For several years I have been trying to have it accepted by my Government and I am still hoping to succeed one day. In the meantime we go on working according to the provisions of the 1886 Brussels Conventions.

Despite the non-ratification of the new Convention, greater efforts have been made to provide an understanding of government publishing practices past and present, to indicate sources of information concerning the existence of publications and to describe how copies may be obtained.

In 1963 the Centre interuniversitaire d'histoire contemporaine published Denise De Weerdt's *Bibliographie rétrospective des publications officielles de la Belgique, 1794–1914*. This is conceived as a complement to the *Bibliographie de l'histoire de Belgique, 1789–1831* by M. P. Gérin. In Mrs De Weerdt's view, official publications are all items published by Parliament, the State, the Government, ministerial departments, provinces and municipalities on the one hand, and those published by the national scientific institutions, associations, societies and committees established or recognized by the Government on the other. Her work is based on the *Liste des documents officiels de la Belgique, Parlement, ministères, provinces, communes, institutions et établissements officiels,* issued in 1912 by the Commission royale belge des échanges internationaux, which was compiled from the printed catalogues of the ministries, the alphabetical catalogue of the Bibliothèque royale de Belgique and the lists of the National Archives. It is not an exhaustive bibliography of Belgian official publications, but it was and still is a useful reference work for historians.

Also worthy of mention are:

1. The catalogue of publications issued by the Institut national de statistiques of the Ministry for Economic Affairs, which is regularly updated.
2. The work of Julien Van Hove: *Répertoire des périodiques paraissant en Belgique/Repertorium van de in België verschijnende Tijdschriften* and its supplements. This lists, in alphabetical order, periodicals issued by the Government.
3. The work of Jean Meyriat: *A Study of Current Bibliographies of National Official Publications* which considers on p. 171–4 the problem of official publications in Belgium.

After this short historical survey, we can now consider the present situation. Unfortunately we have no equivalent of HMSO. The printing of Belgian official publications is not centralized. The Imprimerie du Moniteur belge, Brussels, under the Ministry of Justice, prints the *Moniteur* (*Official Journal*) and some government publications. Other official publications are printed privately or by small ministerial printing-shops.

The same situation exists with regard to the publication and distribution of Belgian official publications. Each ministry is its own publisher and very often the departments belonging to the same ministry are unaware of what their colleagues are issuing.

Consequently, I believe that it is essential to establish in Belgium an official agency which receives several copies of all official publications and is charged with the preservation and distribution of copies of those publications to depository libraries located throughout the country. These depositories would preserve them and make them accessible to all enquirers.

To realize such a project we need first of all to have a legal definition of official publications. Perhaps Belgium could be guided by the definition of the French Commission des Publications administratives (*Journal officiel* of 31st July 1938, p. 9094–5):

> En principe sont qualifiées publications officielles d'une administration publique, ou encore d'une administration d'intérêt général soumise au contrôle de pouvoirs publics, les impressions qui portent, soit en tête de leur page de titre, le nom de cet organisme comme auteur principal, soit sous leur titre, dans leur texte ou sur leur couverture, une mention établissant que la responsabilité de leur rédaction est assurée par l'organisme en question. Devront être considérées comme officielles les éditions graphiques qui portent d'une façon apparente la mention d'une administration publique responsable de leur création.'

I think that we should admit in Belgium the existence of semi-official as well as official publications and that here again we could borrow the definition of the French Commission des Publications officielles (*Journal officiel* of 31st July 1938 p. 9094–5):

> Devront être considérées comme *semi-officielles* ou officieuses les publications de tout order qui, quoique documentées et approuvées par une administration publique, ne portent pas de mention formelle de la responsabilité de cette administration. Le caractère semi-officiel d'une publication pourra donc être fixé par une mention indiquant qu'elle a été créée *sous les auspices, sous le contrôle, ou avec le concours* d'une administration publique. Ce caractère semi-officiel peut résulter, pour certains ouvrages ou documents, d'une mention de patronage, de subvention, de souscription officielle. . . . Enfin, en dehors de ces différentes conditions, certaines publications peuvent encore être considérées comme semi-officielles ou officieuses, en raison du fait des documents qu'ils reproduisent ou de la collaboration d'une administration publique à leur rédaction.'

Once an official agency for the preservation of one copy and the distribution of other copies to depository libraries has been established, it should be required to compile and publish a list of official and semi-official publications every year, with quinquennial cumulations.

From 1st January 1966, one copy of every publication issued in Belgium, and of all publications issued abroad but written by Belgian authors who reside in Belgium, must be deposited in the Bibliothèque royale Albert 1er in Brussels (Act of 8th April 1965, *Moniteur belge*, 18th June 1965). The Act states that: 'l'obligation légale s'applique aux personnes morales (en ce compris celles de droit public) comme aux personnes physiques agissant à titre individuel ou en tant que membres d'associations non dotées de la personnalité juridique'. This clearly implies that all official as well as semi-official publications must be deposited. Unfortunately this is far from being the case in practice. Consequently, we cannot rely on the *Bibliographie de Belgique* for a comprehensive coverage of our official publications. We can but hope that it will soon be possible to have a supplement comparable to *Supplément* F of the *Bibliographie de la France*.

With the aim of improving the cataloguing, indexing and listing of official publications, a Sub-committee of the Committee of Documentation was set up. It began its activities on 31st March 1958, and consisted of representatives of the Ministère de l'Instruction Publique, the Service de l'Education populaire et des bibliothèques publiques, the Bibliothèque royale de Belgique, the Association belge de documentation (ADB), the Association des bibliothécaires et du personnel des bibliothèques des ministères de Belgique, the Association des conservateurs d'archives, de bibliothèques et de musées de Belgique, the Vlaamse Vereniging van Bibliotheek-. Archief-. en Museumpersoneel, and the Institut belge de Normalisation (IBN). The Sub-committee toiled for five years to lay down a set of cataloguing rules for official publications. These were eventually approved and are set out in the standard NBN 570/1963. Unfortunately they have never been applied.

I can only conclude by expressing the hope that our responsible authorities will eventually acknowledge that it is essential to provide an understanding of government publishing practices past and present, to make available existing sources of information on official and semi-official publications and to provide assistance to those who wish to unlock that great library covering almost every field of human knowledge and endeavour. The Service belge des échanges internationaux is, of course, ready to play its part in this field.

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British official publications

David Holland

Librarian, House of Commons Library

I HAVE ACCEPTED the task of presenting a paper on British official publications because the House of Commons Library, in which I have had the advantage of working during the last 28 years, provides a good base from which to survey the whole field. We are strong in the older publications. During the last century, the main initiative came from Parliament, and in particular from the House of Commons. A hundred years ago the Civil Service was relatively small. Nearly all official documents were published by the authority of Parliament. Parliament was concerned with the pre-legislative stage, identifying problems, examining witnesses, and bringing dark areas into the full glare of publicity. Much has changed. Our Civil Service is now large and powerful. It is for that reason that, like many other legislators, British Members seek to arm themselves against the Executive. Their Library plays a small part in the struggle. Because we are all librarians, it may be of interest to let one of my predecessors, Thomas Vardon, speak for himself:

> How do you distinguish the duties of attending as a librarian to the Parliamentary Library from the duties of attending any other public library?—The distinction is very strong in practice when properly worked out. My duties, as attending the parliamentary department of the Library, I consider to embrace the attendance on Members generally, or select committees specially, and upon the House during the progress of public business. The attendance on Members generally is rather indefinite, but it amounts in fact to this, that to the extent of time which I can give, which is day and night during the sitting of the House, the practice is, that there is no subject connected with parliamentary business, on finance, or the forms of the House, or the progress of Bills, or the contents of Acts, on which I am not called upon to afford instant information. In respect to select committees, the notes continually sent me from the Chairmen or members of Committees do not specify 'I want such and such a volume of such a work,' but their notes contain generally queries whether there be law upon such and such a subject; if there be, where it can be found; in what Acts: or regarding parliamentary papers, whether such information can be given, and whether, without troubling the Members with long papers, I can state briefly the information desired in their queries, which of course involves a great deal of indefinite labour during the whole of the day. Then, to the House at night, every Member must be aware of the sort of applications which are made to the Librarians, by the minute, I may almost say, for the debates, or the divisions which have taken place on particular occasions for information concerning Finance Papers, Trade or Acts of Parliament relating to the subject under discussion, &c. [BPP 1835 (104)]*

Two phrases used by Vardon are particularly significant. 'Instant information' still describes our reference function, while 'whether, without troubling the Members with long papers, I can state briefly the information desired in their queries' remains an apt description of what our research service tries to provide.

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* BPP = British Parliamentary Papers; 1835 is a Session of Parliament; (104) is the serial number, unique to that Session, of a publication ordered to be printed by the House of Commons.

The extract also suggests the importance of official publications in the work of a legislative library.

It may be appropriate at this moment to take a deep breath and state two fundamental truths about official publications. Librarians dislike them because they lack 'authors', and consequently cannot be treated in the same way as ordinary 'books'. Users of libraries dislike official publications because, being official, they are almost by definition dull. Therefore it is necessary, from time to time, for books to be written with the aim of rehabilitating official publications. This may be the place, in this paper, to survey the literature very briefly.

Giving the most recent first, the following books are available, and should find a place in any library which has holdings of our publications:

(a) PEMBERTON, JOHN E. *British official publications.* 2nd revised edition. Pergamon Press, 1973. Correctly referred to by Ollé as 'The only large-scale general treatise'. Particularly strong on parliamentary publications, and admirably illustrated and indexed.

(b) OLLÉ, JAMES G. *An introduction to British government publications.* 2nd edition, fully revised and enlarged. Association of Assistant Librarians, 1973. A short, thoughtful work containing chapters on: the government publishers; parliamentary and non-parliamentary publications; the range of government publications; tracing and acquiring new government publications; tracing and acquiring old government publications; the government publications of Northern Ireland; government publications in libraries. With five useful appendixes and a good index.

(c) BOND, MAURICE F. *Guide to the records of Parliament.* HMSO, 1971. Quite apart from being indispensable in terms of providing an orderly description of our ancient and complex parliamentary records, this book is a guide to the printed records of both Houses, including our 'business papers', thus illuminating an obscure area.

Between them, these three books lead through their bibliographical notes to many further works in the field. I am tempted to add three other books, again working backwards in time:

(d) FORD, PETER *and* FORD, GRACE, eds. *Luke Graves Hansard, his diary, 1814–1841: a case study in the reform of patronage.* Blackwell, 1962. The Fords, of the University of Southampton, have laboured long and admirably in their *Parliamentary papers series*, which is designed to lead students to the vast mass of data available to them in parliamentary papers. By publishing Hansard's *Diary* they have made available a fascinating record of the pressures under which an important officer of the House of Commons tried to defend himself against the crusading zeal of reformist Select Committees.

(e) WINFIELD, PERCY H. *The chief sources of English legal history.* Harvard University Press, 1925. This book (thoughtfully, and often amusingly, written) covers the vast field of English legal records. Necessarily, it embraces our Public Records, and thus touches upon State Papers, from which many of our government publications trace their descent. Should be consulted by students who seek to place government publications in their historical context.

(f) CAMPBELL, FRANCIS B. F. *The theory of national and international bibliography.* Library Bureaux, 1896. A pioneering work, trenchant in style, which is, deservedly, to be reprinted.

I have Campbell's authority for the assertion that librarians do not like official publications. His solution to that problem was to insist that official literature (as he called it) should be dealt with quite separately from general literature. Even in the House of Commons Library, in which it is second nature to use official publications, we exclude several important series from our general catalogue. The important consequence of not cataloguing, for example, *British parliamentary papers* (BPP) is that our subject catalogue is, on the face of it, far less helpful than it might be. On the other hand a subject approach to BPP can bring about its own difficulties: given that the official aspect of a subject is likely to be narrow (usually legalistic and administrative) is it not wise to leave the subject catalogue for more general references? It may be a major disability in large subject catalogues that no distinction is made between short books, designed for the general reader, and longer, more academic books. To give a simple example, there are plenty of books about our system of nationalized industries to which a general reader might safely be referred, but he would need a heroic appetite to tackle our now extensive series of *Reports* from the Select Committee on Nationalized Industries.

Having separated official from general material, Campbell pours scorn on the idea of selections, alluding to 'the fallacy that it is possible, on a *large* scale to make a selection of Official Documents which are of value....' His obvious point is that what may appear valuable to one person may not accord with the values of other people, but he is also stipulating the absolute value of completeness:

> 'A National Catalogue of Official Documents should be absolutely *complete*, and it should be so arranged as to enable both librarian and student to find any single work, or any group of works, on any subject at a moment's notice, and with absolute certainty.'

Admirable objectives, regrettably difficult to achieve! Even Campbell's condition precedent of a 'National Catalogue' has never quite been met in this country. Her Majesty's Stationery Office (HMSO) come nearest, as government publishers, to providing such a catalogue by the publication of their daily, monthly and sectional lists, drawn together with five-yearly cumulated indexes in their annual *Catalogue of government publications,* but both because HMSO list only publications for sale, and because our nationalized industries (in particular) aspire to publish 'glossy' reports, which look handsome on directors' tables but which are not published by HMSO, completeness has never been achieved.

Campbell's phrase 'any single work' is important. He is not suggesting that it was then within the power of the librarian to provide access to any *part* of a single work 'at a moment's notice, and with absolute certainty', but rather that every work should be listed, and that it should be pigeon-holed under what computer men call a bucket-term. He is saying in effect: 'Look. We the librarians have done our job. Every document *wholly* concerned with, say, Agriculture has been grouped with other documents falling within that category. If you, the student, seek material on some special aspect of Agriculture, say egg marketing, it must be there somewhere. It is up to you to use such indexes as have been provided.' A bucket-term has certain advantages from a practitioner's point of view: it is so wide that the initial stages of distributing material under broad subject headings is almost foolproof. On the other hand it is daunting to be confronted with too many references: the problem of calibrating index terms, so that a given total of references can be distributed, in manageable numbers, under clear headings, is one of the major problems of practical librarianship.

It is of course technically possible to access *all significant works,* 'at a moment's notice, and with absolute certainty'. The conditions for this extension of Campbell's proposition are relatively simple. First, the text to be searched must have been computer-typeset, and since the technique of entering text on a computer terminal, together with simple editorial instructions, is reasonably cost-effective *in itself* as opposed to the cost of traditional printing processes, there is already a case for computer-typesetting texts, especially when they are extensive and complex, or are likely to require amendments and reprinting. The text so produced can be stored in its entirety in computer storage. It is now machine-readable provided that the second condition has been fulfilled of a sophisticated word-search package linking the computer and its interrogator. Most people who have had the patience to read this paper so far will be familiar with the basic technique of word-search. You type in a word on the terminal, and the computer (trained to do so by the word-search package) immediately quantifies the occurrences of the word wanted in the documents it has searched. The computer has a purely linear approach. It must work right through the entire data bank, and it misses nothing. You may now have too many occurrences, and proceed to narrow down the field of search by adding other words and descriptors. When you have reduced the field to manageable proportions, you browse through all the texts, or parts of texts, which have been identified, and instruct the computer to print out those which are most relevant to your needs. The rather startling possibility emerges (always provided that more and more texts are computer-typeset) that it will become possible to avoid altogether the time-consuming process of 'tagging' texts with index terms because retrieval, at word-search level, provides a practicable alternative.*

Librarians may be reluctant to abandon index terms. There are many attractions in the construction of a thesaurus for use with computers, particularly when SDI is aimed at. But I would argue that there is a danger in being too insistent that the language familiar to librarians, which has been constructed by them for their own use, is necessarily superior to the language actually used by authors of texts. It is almost certainly a matter of degree. A large percentage of the text matter to be processed may no doubt be compatible with the analysis provided by a good thesaurus, but there is likely to be a small percentage of text which is incompatible (perhaps because it has been generated in response to new situations) and it is wrong to try to make this new material conform with a rigid thesaural analysis: to do so means that one is forcing references under inappropriate headings, thus lessening the chances of accurate retrieval. Doubtless it is possible to build an element of flexibility into a design for a thesaurus (indeed, the Aslib feasibility study for the House of Commons Library, *Computer support for parliamentary information service*, 1971, recognized the problem) but the concept of permitted, and non-permitted, terms, which is integral to the idea of a thesaurus, carries with it a suggestion of linguistic censorship. It will be argued that the concept of 'natural text', searchable only by use of words actually to be found in it, is by comparison far too flexible to be used successfully. Only a comparative trial of the two approaches, carefully controlled, could settle the argument.

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* I am sorry to complicate still further an already complex passage, but I should add that work is being done on optical search, by computers, of texts in micro-form. If this proves feasible, then the stage of computer-typesetting becomes unnecessary. I have yet to see this process demonstrated.

I must apologize for devoting so many hard words to this still hypothetical area; but the volume of official publications flowing out from government printers shows no signs of diminishing; only a world shortage of paper (and of course there are already signs of that) could seriously affect the situation. Hence there is some point in considering the means available to librarians for handling the flow of information. Microforms—film, fiche and, by extension, computer storage, come into the reckoning—but perhaps this would be a good moment to return to the vast mass of British official publications already available in printed form.

The books I have previously referred to between them provide most of the picture. However, it may be helpful if I try to draw attention, from the vantage point of the House of Commons Library, to certain aspects.

Published by authority

The principal authority in this country remains the Crown. Intimately bound up with this concept, particularly in early days, were various courts of law (*see* (e) Winfield). Among these were the high court of Parliament (*see* (c) Bond). Within Parliament, the House of Commons (because it assumed control of taxation) became pre-eminent. The more important Ministers of the Crown must be elected Members of the House of Commons. Our official publications usually indicate on their title pages the authority under which they are published, thus providing an acceptable 'author' for the document. The names of the various departments of state change from time to time, and sometimes their functions are varied: it is therefore wise to follow these changes in an author catalogue. For example, the Board of Trade became the Department of Trade and Industry, and catalogue entries should follow suit.

The legislative process

The essential dullness of official publications is perfectly exemplified by legislative drafts (Bills) and the final statutory form of Acts of Parliament. Nevertheless I have an impression that it is dangerous to pay too little attention to this basic element in official publications. No doubt the Fords (*see* (d)), who set out to attract the interest of students, are wise to shield them, in the initial stages, from the arid difficulties of Bills and Acts, but these documents are after all the *means* of effecting social changes, so that a serious student should not be content with confining his attention merely to the *recommendations* contained in reports from committees, etc., of inquiry. In the House of Commons Library we see the legislative process as a continuing story. We try to pick up the first official hints, often to be found in parliamentary debates. We follow the parliamentary process through both Houses, and keep an eye on press comment during this process. Then we are concerned with documents sponsored by an Act: Reports and Accounts required to be laid before parliament on the one hand, and subordinate legislation enabled by it on the other. Most of this material remains inescapably dull, but there is a certain interest in following it comprehensively, and sometimes the debates during the parliamentary process are of real significance. There are areas of the legislative process which are a closed book even to us: the consultative stage within the department of origin, the drafting stage before a Bill is published, and the contents of the Minister's file with the aid of which he steers the legislation through parliament, but I hope that I have indicated that there is much relevant material which is published, and which can be drawn together by librarians.

Published indexes to BPP

The official indexes are described in the standard works I have noted above (*see* particularly Pemberton (a)). They are constructed on principles evolved by the Hansards (*see* Ford (d)). They tend to be textual rather than conceptual: by this I mean that if you know the title of a document (and if you are working from a reference you usually do know) then you should have no real difficulty in locating the required paper by using the official indexes. However, if your starting point is general and conceptual (for example, if you are looking for material on Local Government) then you may have more difficulty *simply because the form of words you use to express the concept may not have been in use during the period which you are searching*. It may be worth following through an actual example: 'Municipal Corporations' is a major 19th-century indexing term, whereas 'Local Government' is scarcely to be found (of course, the first term is narrower than the second, thus offering a greater degree of precision). It should be noted that the Hansards believed in equipping Reports printed by them with generous textual indexes: the Select Committee Report on Municipal Corporations [BPP 1833 (344)] has 344 pages of text accompanied by 47 pages of index (or nearly 14 per cent by bulk). Even more lavish was the index provided in 1839 to the 2,890 pages of information collected by the Commissioners on Municipal Corporations [BPP 1835 (116)]; this amounted to 678 pages (or more than 23 per cent by bulk). Hansard regarded this monumental index, which was compiled by Fletcher, the secretary to the Commission, as 'prolix' (*see* Ford (d), p. 212), but Hansard was vexed because he had not printed the Report, and in fact the index is a very fine one.

HMSO—the government publishers

I have already mentioned Campbell's idea of a 'National Catalogue of Official Documents' and have suggested that HMSO's catalogues constitute our nearest approach to that ideal. The earlier history of these sale catalogues has been studied by Ken Mallaber in his most useful article:

The sale catalogues of British government publications, 1836–1965. *Journal of Librarianship*, 5, 4, April 1973.

Ken Mallaber is the leading authority in this country on the practicalities of our government publications: I am delighted to pay tribute to him in this paper.

Summary of personal views

After a good number of years of experience, it remains my view that government publications form a specialized field, calling for separate treatment and, ideally, for staff accustomed not only to handling the material but also to exploiting it. The sheer volume of the material confirms the need for 'National Bibliographies' on the lines suggested by Campbell in 1896. Ideally, these bibliographies should be computer-typeset with the object of automating concordances leading to every effective word in every 'long title' published during periods of years. As to international co-operation, which I have not touched upon in this paper, I would applaud any effort made by, for example, Unesco to formulate an international code of enquiry (facilitating telex intercommunication) but I would not personally expect early or useful results to emerge from the endeavour.

I conclude by appending a list of references contained in *A handlist of articles in periodicals and other serial publications relating to the history of Parliament*, compiled by H. S. Cobb as part of a House of Lords Record Office Supplementary Memorandum, 1973. The *Handlist* was prepared for internal use, and has not been published.

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Danish official publications*

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IT IS A characteristic feature of Danish official publications that two typically 'official' publications, the official yearbook (*Kongelig Dansk Hof- og Statskalender*) and the national bibliography (*Dansk Bogfortegnelse*), although compiled by civil servants, are printed commercially.

There are four main categories of Danish official publications:

1. Publications of the Folketing and dependent institutions.
2. Publications of the ministries and dependent institutions.
3. Publications of local authorities.
4. Semi-official publications subsidized by the State.

1. Publications of the Folketing and dependent institutions

The Folketing publishes the official report of its proceedings (*Folketingstidende*) with four supplements:

(a) Bills
(b) Reports of Parliamentary Committees.
(c) Resolutions and Bills passed by the Folketing.
(d) Estimates and Supplementary Estimates.

Acts and Statutes are published by the Ministry of Justice in the *Lovtidende* (*Law Gazette*):

Section (a) Bills which have received the Royal Assent, Ministerial and Royal orders.
(b) Finance Acts, Acts Embodying Supplementary Estimates, Danish Nationality Acts.
(c) Treaties ratified by Denmark.

The *Ministerialtidende* (*Gazette*) contains government circulars to their subsidiary authorities, in many cases expositions of and supplements to laws.

Under the jurisdiction of the Folketing is an institution which has attracted considerable attention as a device for controlling bureaucracy, and which has paved the way for the establishment of similar institutions in other countries—the Ombudsman.

In 1954 an Act was passed for the appointment by Parliament of an independent person to supervise civil and military administration, the so-called Ombudsman. This institution had existed in Sweden since 1809, but did not have the same powers. The Ombudsman is an officer of Parliament who investigates complaints from citizens that they have been unfairly dealt with by government departments, and who, if he finds a complaint justified, seeks a remedy. An average of 1,000 complaints are received every year. 75 per cent are rejected immediately, and only 20 per cent of the cases treated lead to an action by the Ombudsman in the form of criticism or recommendation. The work of the Ombudsman is described in his annual report (*Folketingets ombudsmands beretning for året . . .*).

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* This is an abridged version of Miss Ejlersen's paper.

The most important co-ordinating body for Scandinavian co-operation is the Nordisk Råd (Nordic Council) which was established in 1952. The council's members are chosen from the MPs of the Scandinavian countries, and it meets in session once a year at one of the capitals of Denmark, Norway, Sweden, Finland or Iceland. The council adopts recommendations to the governments, and the governments submit annual reports to the council on the action taken in regard to recommendations for joint action by all or some of the member countries. The Nordisk Råd publishes *Nordisk Kontakt* and *Nordisk Udredningsserie* (*Nordic Recommendations*).

2. Publications of the ministries and dependent institutions

There is no institution in Denmark like HMSO or the Queen's Printer (and no Government Bookshops). Each ministry or institution uses its own duplication or printing office or private printing firms.

In 1945 a committee report tried to co-ordinate and standardize the printing of official publications, but the attempt failed and the recommendations were not followed. There is, however, a central agency which exerts a guiding influence on the printing of official publications, the Statens Trykningskontor (approx. State Printer). All government institutions are obliged to submit manuscripts and quotations from printers to this agency for approval, as well as quotations for the final cost of printing. The agency also assigns numbers to ministerial committee reports and puts them on sale.

Publications in foreign languages are issued in particular by the Ministry of Foreign Affairs, which each year publishes a number of journals and books of representative character on Denmark and things Danish. The Ministry of Education publishes some (mostly duplicated) material in foreign languages on Danish educational matters. The Office of Environmental Protection is planning to issue informative and educational publications of a more popular character than most official publications. Each ministry publishes the reports of the committees which it has appointed.

The Ministry of Commerce and Trade publishes the *Officiel fortegnelse over danske skibe med kendingssingnaler* (*Danmarks skibsliste*) (*Export Directory of Denmark*) and the official sailing list and list of signal letters; the reports of the draft board are published by the Ministry of the Interior and not by the Ministry of Defence, but generally speaking the publishers of official publications are not the ministries but the respective institutions.

In this connection it might be mentioned that only a limited number of the decisions of the courts are published by the State or by means of State subsidies. The decisions of the Supreme Court are to be found in *Nordisk Domssamling* (*Nordic Law Reports*), and representative decisions of the inferior and High Courts in the commercially published *Ugeskrift for Retsvasen* (legal weekly).

The decisions of the Industrial Court (*Arbejdsrettens domme*) are published by the Court, which belongs to the Ministry of Labour.

Approximately 300 government institutions issue their own publications. In many cases this is only an annual report, but the various research centres also bring out a large number of scientific publications.

3. Publications of local authorities

The publications of local authorities have until now been of limited interest, but following the reorganization of the Danish local government system it is expected that publications of more general interest will appear within this category. In 1970 the number of local authorities was reduced from 1,400 to about 300 and the number of county authorities from 25 to 14. The main fields of the local authorities are the construction and upkeep of roads, and maintenance of health and hospital services. Certain responsibilities previously exercised by the central government will be transferred to the County Councils; for example, various fields within the social services and education.

4. Semi-official publications subsidized by the State

Most semi-official publications are subsidized by the ministries. Within the humanities, for example, the Ministries of Education and Cultural Affairs are generous in their subsidy of periodicals. The yearbooks of local historical societies are also subsidized, as are a number of journals of fairly popular character. Without subsidies it would be impossible for these journals to survive because of their limited circulation, despite the fact that a number of them have foreign-language summaries.

Bibliographies

Since 1948 the annual bibliography of Danish official publications, *Impressa Publica Regni Danici (Bibliografi over Danmarks Offentlige Publikationer)* has been compiled and published by IDE. Publications are listed under the government departments and other bodies responsible for their preparation, which are arranged in alphabetical order under each ministry. Serial publications are listed first under the institutions to which they belong, followed by subsidized publications. The bibliography attempts completeness in respect of official publications and also includes the publications of the municipalities of Copenhagen and Aarhus, and a selection of semi-official publications. Each entry gives the number of pages per publication, and for periodicals the number of issues. International Standard Book Numbers are also provided, but no prices.

A special feature of the bibliography is a complete list of all Danish doctoral dissertations, whether subsidized or not. All committee reports appear twice in the bibliography, once in a numerical list and again under the department or other body responsible for producing them.

The bibliography also contains an index of proper names (authors and translators), a subject index, and a list of the main entries of the subject index in English. The subject index also gives the titles of periodical publications and the name of each institution, the official name as well as more popular designations, so that, for example, Det Kongelige Danske Videnskabernes Selskab (The

Royal Danish Academy of Science and Letters) is listed under V as well as under K.

Many general and special bibliographies include an increasing number of official publications, but apart from the fact that they are published by government institutions there is no way of identifying them as such. This also is true of the national bibliography (*Dansk Bogfortegnelse*) as well as the bibliography of periodicals (*Dansk Tidsskrift Fortegnelse*) and its supplements. There is no special section of the national bibliography devoted to official publications like the French *Supplément F,* and no asterisk or other identification.

Two special bibliographies may be mentioned:

Dansk juridisk bibliografi, Comp. Jens Søndergaard, Juristforbundets forlag, København, 1973

which among other things contains the titles of a number of recent committee reports not to be found in either the national bibliography or in *Impressa Publica Regni Danici,* and

Danske kommissionsbetænkninger 1850–1970, Comp. Palle Svennevig, Folketingets bibliotek og oplysningstjenste, København, 1972

a bibliography of committee reports. There have been plans for turning this into a periodical publication.

Methods of obtaining Danish official publications

Danish libraries

The Royal Library (since 1781) and the State and University Library of Aarhus (since 1902) have each obtained one copy of all Danish publications by legal deposit, whereas the University Libraries of Copenhagen are entitled to requisition a copy of any publication they need. The material is handed over to the libraries by the printers, but there have been considerable difficulties during recent years when more and more publications are printed by non-traditional methods, and a revision of the law of legal deposit is foreseen. With respect to official publications efforts have been made to locate such publications through co-operation with IDE and other means.

Foreign libraries

IDE receives all Danish official publications in varying numbers, according to need, direct from the issuing bodies: ministries, research centres, libraries, museums and so forth. The material is used in the compilation of *Impressa Publica Regni Danici,* and for the exchange of official publications. Bilateral agreements (inter-governmental or between exchange centres) concerning the exchange of full or partial sets of official publications have been signed with Australia, Austria, Belgium, the Federal Republic of Germany, Great Britain, Holland, Italy, Poland, South Korea, the USA, the USSR and Yugoslavia, and a number of new agreements are in preparation. Incoming foreign official publications are distributed to approximately 60 Danish research libraries according to their fields of interest, a high degree of specialization being typical of the Danish research library system.

Exchange of official publications normally takes place only with national libraries. For other libraries wishing to obtain Danish official publications, two courses of action are open:

1. A number of Danish institutions carry out their own exchanges, e.g. the National Technological Library, the Library of the Danish Atomic Energy Commission, the Library and Information Service of the Danish Parliament, and the Library of Danmarks Statistik.
2. A large proportion of the publications are available through booksellers.

Danish libraries with good collections of Danish official publications

Denmark has no State Paper Room; Danish official publications are to be found in the Danish departments and pamphlet sections of the Royal Library, the State and University Library of Aarhus and the University Libraries of Copenhagen, with no special indication of their being official publications. The Library and Information Service of the Danish Parliament (Folketingets Bibliotek og Oplysningstjeneste) and the Library of the Ministry of Labour and Social Affairs (Arbejds- og Socialministeriennes bibliotek) possess considerable collections within their fields, and receive approximately 50 per cent of their Danish official publications by request from the issuing bodies without charge. The Library of the Ministry of Labour and Social Affairs is now the central library of the Danish Civil Service; its collection consists in part of books transferred from the libraries of the Ministries of the Interior, Housing, Finance, and Economic Affairs, as well as the library of the Inland Revenue Department. The library of the Folketing gives a special service to politicians, but official libraries are also frequented by students of the social and economic sciences. All the libraries mentioned are open to the public.

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THE PROLIFERATION OF administrative publications presents an acute problem to public authorities as well as to librarians whose job it is to keep records of them. The widening of the fields covered or controlled by government departments is a phenomenon common to all countries. They are producing an ever-increasing number of publications for their own needs as well as to keep the public informed, which is of primary importance in a democracy. However, the Government and Parliament have been trying for a long time to avoid an excessive and disorganized proliferation of publications which are a drain on the state budget. As for the librarian, he has to keep on top of this rising tide. He has to trace, record, file, store and place at the disposal of the public documents which represent a privileged source of information, particularly in the field of social sciences, but which are often difficult to obtain.

The French system of official publications shows a striking absence of centralization and lack of coherence. Production is haphazard, being left to the initiative of ministries, or often to directorates and sometimes to mere government offices. Distribution is disorganized and access to documents varies. However, a recent assessment of the problem by the Prime Minister's Office has led to the creation of the Commission de coordination de la documentation administrative (Commission for the Co-ordination of Administrative Documentation), which is currently studying ways of improving the situation.

1. Main publications

1.1. The most important French official publication is the *Journal officiel de la République française* (*Official Journal of the French Republic*)[1], which was founded on 1st January 1870. This is the organ in which legislative and regulatory texts are published, which (in its various editions) reports the parliamentary debates of the Assemblée nationale, the Sénat and the Conseil économique et social, and in which certain important administrative documents such as the reports and statistics of the Cour des Comptes are published.

Various specialized bulletins appear in conjunction with the *Journal officiel,* dealing with compulsory legal announcements, business announcements, government sales, decorations, medals and awards.

The texts which appear in the *Journal officiel* are reproduced with the same typesetting in several series of octavo publications which are widely distributed: the *Textes d'intérêt général* published once a fortnight; the series of *Brochures* of the *Journal officiel,* numbered from 1,000 onwards, re-edited at varying intervals and reproducing the main texts which have appeared on every major subject; the red-backed *Codes*; the *Recueil des traités et accords de la France* (*Collections of French Treaties and Agreements*) which has appeared every fortnight since 1969.

1.2. A large number of ministries publish *Bulletins officiels* which reproduce all the texts which concern them: laws, decrees, orders, decisions, circulars, notices of examinations, etc., whether or not they have been published in the *Journal officiel*. Amongst these some, such as the *Bulletin officiel du Ministère de l'éducation nationale* or the reviews of the Ministère des postes et télécommunications, have a very wide circulation because of the number of civil servants involved.

1.3. Publications of the assemblies,[2] except for the parliamentary debates published in the *Journal officiel* include the *Impressions parlementaires* (draft and proposed laws, reports, etc.), bulletins by the commissions, analytical reports, critical reviews, lists of members of Parliament, etc. The Secrétariat de l'Assemblée nationale has started publication of the *Recueil méthodique législatif* which reproduces all the parliamentary work of the Assemblée nationale and the Sénat, preceding the announcement in the *Journal officiel* of certain important legislative texts (laws on descent, on the creation and organization of the regions, on general military regulations, the code of French nationality, etc.).

1.4. Official judicial publications are not very numerous in France, as decisions by the courts and cases are dealt with in publications by the specialized private publishers Sirey et Dalloz. However, mention should be made of the *Recueil des décisions du Conseil constitutionnel* which appears every year; the *Rapport annuel de la Cour de Cassation*; the *Jurisprudence de la Cour des comptes,* which appears every three or four years, and its *Rapport annuel.* Appeal courts generally only publish the addresses made at their opening sessions.

1.5. Reports on the activities of government departments are not very numerous and are often internal documents.

1.6. Special mention should, however, be made of statistical publications. The Institut national de la statistique et des études économiques (INSEE), which comes under the Ministère de l'économie et des finances, publishes most of these and has the role of co-ordinating the work of other ministries in this field. The most important statistical publications are: *L'Annuaire statistique de la France,* which has appeared every year since 1878; the *Collections de l'INSEE*; the review *Economie et statistique* which appears every month; the *Tableaux de l'économie française* appearing every two years. *Statistiques du commerce extérieur de la France* have been published by the Direction générale des douanes since 1960 in many series.

1.7. As regards information publications, a special place should be given to Documentation française, a service which comes under the Direction de la documentation et de la diffusion of the Secrétariat général du government. This body, which is run like a normal publishing house, distributes in an accessible and attractive way both brochures highlighting the main topics of current interest at home or abroad, and, to an increasing extent, official texts and reports of interest to the general public. In this way it publishes the reports of the National Plan and studies on regional economic planning. Its main series of publications are: *Documentation française illustrée* which has appeared every fortnight since 1946; *Notes et études documentaires,* 100 issues a year since 1949; *Politique étrangère de la France* and *Politique intérieure de la France,* which have both appeared every fortnight since 1966 and 1969 respectively, and several reviews of general interest.

1.8. Mention should also be made of the publications of public bodies (bodies to whom the State has granted legal status and financial autonomy). Some, which are administrative in character, closely resemble central administrations (for example, the Institut national de recherches et de documentation pédagogiques, which publishes numerous publications for the Ministère de l'éducation nationale). Others, which are industrial and commercial in character, such as Electricité de France and CNCF (French Railways), publish to a varying extent in their own particular fields. The Centre national de la recherche scientifique also produces many publications.

1.9. Local authorities (Departments and Communes) have their own publications system which, for each Department, includes at least le *Recueil des actes administratifs,* the deliberations of the Conseil général, the budget and accounts, information leaflets and publications of specialized local departmental services (agriculture, equipment, social welfare, etc). Regional publications (each region covering several Departments) are beginning to appear.

2. Publication and distribution of official publications

There is no centralization in France either in the field of printing or publishing administrative publications.

2.1. Printing

2.1.1. L'Imprimerie nationale does not have a monopoly of administrative publications, although the decree of 4th December 1961 lays down that 'it should ensure the publication of documents necessary for the operation of public authorities' and that 'all printing programmes drawn up by the administrative services must be submitted to the Imprimerie nationale before 15th October of each year'.

It is the Minister of Finance who decides on the list of publications to be carried out by the Imprimerie nationale; other work can either be contracted out or given by the departments concerned to a private firm.

In fact, it can be estimated that the Imprimerie nationale prints only one quarter of the publications of the central administrations. These are mainly important documents which have to be completed within a limited period of time (budget documents) or those which require strict secrecy (examination papers). The Ministère des finances is one of the most frequent but not the only government department to use the Imprimerie nationale. The Imprimerie nationale is an external service of the Ministère de l'économie et des finances. It constitutes an administrative department with a regular administrative, commercial and technical staff.

2.1.2. There are other official printing houses. The first of these is the Imprimerie des Journaux officiels, which comes under the Direction des Journaux officiels, which in turn is attached to the Prime Minister's Office. Its principal publication is the *Journal officiel* and its appendixes. The new type-setting of the *Journal officiel* in two columns has for several years made it possible to use the same type for the printing of official bulletins or collections of official texts of various ministries. The Imprimerie des journaux officiels has also printed the parliamentary publications of the Sénat since 1957, which avoids the expense of resetting when publishing the documents of this assembly. Nevertheless, the Imprimerie remains strictly specialized in the narrow field of legislative and statutory texts or collections of texts arising from the *Journal officiel*. The administrative staff of the printing office are civil servants but the printing and distribution of the *Journal officiel* is contracted out annually under State supervision to a co-operative society whose members must be printers and share in the profits.

2.1.3. The Imprimerie administrative de Melun uses the staff of the Melun goal. It comes exclusively under the Ministère de la Justice and does printing mainly for this ministry and for the Ministère de l'intérieur.

2.1.4. Finally, the Imprimerie de l'Assemblée nationale which prints the various series of parliamentary documents produced by this chamber, as well as the *Recueil des lois* which it also publishes, is in actual fact a private concessionary printing house and not an official printing office as it was once. The words 'Imprimerie de l'Assemblée nationale' printed on documents are a survival from the past.

2.1.5. The Institut géographique national, which is attached to the Ministère des Travaux publics et des Transports, prints all the maps required by the various State departments; it can also do work for individuals.

2.1.6. Besides these printing houses, there are very many duplicating machines within government departments themselves. 60 per cent of administrative publications are produced in this way and this makes control extremely difficult.

It should also be noted that the proliferation of machine-readable records creates a risk of bringing about the production of numerous documents directly from the computer (lists, etc.) and reproduced by the offset process, which are difficult to keep track of.

2.2. *Publishing*

2.2.1. There is no general publishing and distribution policy any more than there is any centralization of printing. Each government department decides itself what it publishes and some publish more extensively than others. Some reports are published as a legal requirement, but these are relatively few in number; as a general rule, departments are not obliged to publish an annual report of their activities. Only 35 such reports were recorded in 1972. In fact, many more do exist but they are not distributed.

2.2.2. Although it generally only acts as a printing office, the Imprimerie nationale distributes some of the publications it prints, either at its four sales offices in Paris, or by post. The Journaux officiels also distribute not only their own publications but also those of the European Communities, either from their premises (26 rue Desaix) or by post.

2.2.3. Although there is no central State department with a publishing monopoly, Documentation française tends to have this role. It has the dual task, as defined by decree of 30th December 1950, of 'publishing and distributing general information documents and bringing about interministerial co-ordination . . . in the field of publishing and distributing the various general information publications produced by administrations and public services'.

Documentation française does not have a printing office of its own but contracts out its publications to private printing houses each year. It not only sells its own publications and those it publishes for other ministries, but is prepared, where possible, to obtain documents published by other ministries for those who request them. It also sells OECD and EEC publications.

2.2.4. Most ministries do not have a central department to co-ordinate the production of their publications and the survey made in the course of 1972 by the Commission de coordination de la documentation administrative revealed that more than 85 per cent of publications were distributed only by the department producing them and that in 53 per cent of cases this was done free of charge.

2.2.5. However, some ministries and departments have their own distribution networks. The Institut nationale de recherches et de documentation pédagogiques prints and distributes the publications of the Ministère de l'éducation nationale in Paris (at 29 rue d'Ulm) and in the provinces at the regional or departmental centres of pedagogical documentation. The Institut national de la statistique et des études économiques distributes its own publications in Paris (at 29 quai Branly) and in the provinces at regional headquarters, regional economic departments and observation centres, as well as through specialized bookshops.

2.2.6. Some public institutions, such as the Bibliothèque nationale and the Réunion des musées nationaux, publish and distribute their own publications. The Centre national de la recherche scientifique (CNRS) operates like a normal, specialized printing house. There are, therefore, several different distribution networks with no co-ordination between them.

2.2.7. In some cases, in order to gain greater financial facilities, government departments appeal for the publishing and distribution of their publications to private associations created for this purpose in accordance with the 1901 Act, which they subsidize in the form of both money and staff. In this way, the Ministère des affaires étrangères uses the Association pour la diffusion de la pensée française and the Ministère des armées, the Association pour le développement et la diffusion de l'information militaire.

2.2.9. Each government department decides how many copies of each of its publications to print.

2.2.10. As for prices, policies vary greatly and no general rule applies.

The Imprimerie nationale makes no profit but it must operate on the basis of true costs and be able to compete with the private sector. Documentation française works out its sale price from costs and also operates on a true price basis. On the other hand, the Direction des journaux officiels has a completely different policy: it fulfils a public service by making available legislative and statutory texts of interest to the general public. The very low sale price is laid down by law. In the case of the *Journal officiel,* therefore, there is a permanent deficit.

Many administrative departments decide on subscription prices for their publications but at the same time distribute them free! According to the 1972 survey only 47.4 per cent of regular publications are sold, 52.4 per cent being distributed free to government departments and to the public.

Sales through bookshops are practically non-existent due to lack of organization.

Moreover, one wonders how much the authorities worry about selling the publications they produce since, apart from certain notable exceptions (Institut national de la statistique, Documentation française), no advertising is done and as they are very difficult to get to know about and even more difficult to obtain, they remain semi-clandestine.

3. Consultation by the public

Administrative publications can be consulted by the public either at the offices where they are produced or at libraries and specialized centres.

3.1. In Paris

The Bibliothèque nationale, which receives legal deposit copies of everything printed in France, has created a specialized service, the Service des publications officielles, which keeps and makes available to the public not only French publications but also foreign and international publications acquired by gift, exchange or purchase. It is the Bibliothèque nationale, in fact, which is the depository for official publications received as a result of exchange agreements between governments, as well as the publications of inter-governmental organizations.

There is also a special deposit of official publications in the National Assembly and the Senate.

The following two libraries are reserved for a privileged public, for research workers and members of parliament: the Bibliothèque de la Documentation française, which has made a considerable collection of official publications since the second world war and is largely open to the public; the Bibliothèque administrative de la ville de Paris which, although in principle reserved for civil servants of the Prefecture, is in fact also largely open to the public.

Some libraries which are more specially reserved for students possess large collections of official publications: the Bibliothèque Cujas de droit et des sciences économiques, which is the old library of the Paris Law Faculty, and the Bibliothèque de la Fondation nationale des sciences politiques, in Paris.

3.2. In the provinces

While it is relatively easy to consult administrative publications in Paris, it is quite another matter in the provinces. University libraries possess some large collections of general interest, but municipal libraries often keep very few administrative documents. The archive offices of the different Departments include administrative libraries devoted especially to local publications, which are often difficult to find elsewhere.

A large number of administrative documentation centres do, however, exist in the provinces but they are generally reserved for the staffs of the administrative departments concerned.

3.3. Abroad

France, which had not signed the Brussels Convention of 15th March 1886 on the international exchange of official publications, ratified the Paris Convention of 3rd December 1958 on the exchange of official publications.

Bilateral agreements were signed with Belgium in 1891 and renewed in 1950, with the United States in 1945, Great Britain in 1953, Australia in 1955, Israel in 1959 and the Federal Republic of Germany in 1964.

Agreements are in the process of being concluded with Canada, Denmark and Spain, and there is a request outstanding from South Korea. An unofficial agreement is in force with Japan.

The Service des échanges internationaux, which comes under the Ministère de l'éducation nationale, sends French publications abroad and itself receives foreign publications which it passes on to the Bibliothèque nationale, as this is the depository for overseas publications. In accordance with Article 60 of the Finance Act of 31st December 1953, administrations can be requested to supply as many copies of their publications as there are exchange agreements signed by the Ministère des affaires étrangeres (at present 6).

In addition, direct exchanges exist between similar government administrations. For example, the Assemblée nationale exchanges its own publications with foreign parliaments and INSEE has exchanges with a large number of statistical services. These exchanges are not controlled or recorded at the national level.

4. Recording and indexing of official publications

4.1. Indexes

There is no register of all State publications. The absence of any centralization of document production and distribution is obviously a major obstacle to comprehensive recording.

4.1.1. Documentation française publishes the *Bibliographie séléctive des publications officielles françaises,* which has appeared twice a month since 1952. This bibliography, drawn up by librarians representing specialized establishments in this field, attempts to cover the most important administrative documents; it analyses the *Journal officiel,* parliamentary publications and other official periodicals. It provides a *Bulletin des sommaires* from a large number of official periodicals and includes an annual analytical index. This bibliography does not aim at being exhaustive.

4.1.2. In the *Bibliographie de la France, première partie: bibliographie officiel,* compiled by the Bibliothèque nationale and based on publications received under legal deposit arrangements, a special supplement, *Supplément* F, is devoted to official publications. It has appeared since 1950 (6 issues a year). It gives complete bibliographical entries for all administrative publications, while for other publications (scientific and technical works, periodicals and maps) it refers the reader to other parts of the *Bibliographie de la France.* It includes an annual index.

4.1.3. *A Répertoire des publications périodiques et de série de l'administration française* was published by Documentation française in 1973 as a result of a survey made in 1972 by the Commission de coordination de la documentation administrative. This initial survey will have to be kept up to date. It includes, in addition to entries for publications under the various ministry headings, different indexes according to government department, title and subject matter, an appendix devoted to legislative and parliamentary documents and a list of catalogues and administrative sales offices.

4.1.4. In fact, some administrative bodies and departments have their own catalogues. The Imprimerie nationale reissues its sales catalogue about once a year. Documentation française publishes very comprehensive, monthly catalogues of its publications complete with an annual index. INSEE also publishes its catalogue at regular intervals, but certain other public bodies (Institut géographique nationale, CNRS, Bibliothèque nationale, etc.) publish catalogues of their publications with less regularity. These catalogues are distributed by the government department concerned, with no general rules.

4.2. Research in documentation

A study has been carried out at the Direction de la documentation to computerize the indexing of all documents published or sold by Documentation française. The aim, on the one hand, is the automatic publishing of catalogues and, on the other, the development of personalized retrieval searches. Computer trials are to be carried out this year.

At INSEE, statistical data are stored by computer on the data bank system. The SPHYNX system, which is to be extended to the 21 regional economic observation centres, should make it possible to find documents automatically.

At the Bibliothèque nationale, automation plans include, in the first stage, the recording of bibliographical entries in order to make it possible to publish the national bibliography and catalogues by photo-typesetting, as well as the production of magnetic tapes for the purpose of exchanges with other national bibliographical centres.

Automation studies are under way in about twenty administrative documentation centres, some of which are working in liaison with the automated networks of international (ILO, FAO, etc.) or specialized (MEDLARS, NASA, etc.) organizations.

5. New prospects

5.1. Members of Parliament and public authorities have spoken out on several occasions against the absence of co-ordination in official publishing, the dispersion and difficulty of access to publications and the impossibility of estimating the cost of the system.

In 1937, a Commission des publications administratives was formed but its work was interrupted by the second world war.

Several reports by the Comité central d'enquête sur le coût et le rendement des services publics have drawn attention to the urgency with which measures should be taken. An inter-ministerial committee of the administrative documentation service, set up by decree of 24th January 1948, did not, however, produce any tangible results.

5.2. As a result of two reports by the Comité central d'enquête, a Commission de coordination de la documentation administrative, coming under the Prime Minister's Office, was set up quite recently by decree of 13th July 1971. This committee has the job of 'studying ways of improving, in the interests of efficiency and profitability, the documentation work of public authorities and of supervising the co-ordination of technical matters in the publishing activities of the various departments concerned as well as the most satisfactory distribution of publications emanating from public authorities'. It was instructed to draw up a list of periodicals and serial publications providing general information and to keep it up-to-date. It was under this heading that it published the *Répertoire* mentioned earlier. 'No general periodical or serial publication, which it is considered ought to appear on the list, can be created unless the relevant publishing and financing plans have been previously put before the Committee.'

It also has the task of studying 'problems arising from the publication and distribution of publications emanating from central administrations, from their external services and from State organizations'. Under its influence, agreements have been concluded between the large publishing administrations, (Documentation française, Imprimerie nationale, INSEE, and Journaux officiels) with a view to the reciprocal distribution of catalogues and publications until such time as a sales centre is created, which implies a rationalization of highly divergent administrative regulations. The committee has set up a working party to study the application of International Standard Book Numbers (ISBNs) and International Standard Serial Numbers (ISSNs) to administrative publications.

The committee is also preparing a *Répertoire des centres de documentation administrative*. At the same time, it is studying the problems of storage and consultation of documents which, without being secret, cannot be distributed, and is trying to lay down principles which would make it possible to distinguish between those which should and should not be distributed. Even if a good deal remains to be done, this committee has produced the first tangible results of its efforts to co-ordinate and improve the distribution of French official publications.

REFERENCES

1. cf. *Répertoire des publications périodiques et de série de l'administration française*. Paris, la Documentation française, 1973, p. 7–9.
2. *Ibid.*, p. 343–52.

Official publications of the German Federal Republic

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I. OFFICIAL DOCUMENTS IN THE GERMAN FEDERAL REPUBLIC

(*a*) *Definition*

OFFICIAL DOCUMENTS ARE all publications issued or commissioned by authorities and other public bodies.

The term 'publication' will be used in this paper, rather than 'document', in order to include every possible type of material, even maps, plans and audio-materials.

'Authorities' are taken to include all national and municipal departments, their related and subordinate offices, and organizations controlled by them. They also include the legislature and judiciary. The German administrative system distinguishes between government departments at federal level and at regional level, as well as municipal authorities and associations of municipal authorities.

Included among the other public authorities are all institutions, organizations and associations with the official status of a 'corporate body' (i.e. all publicly constituted corporations, institutions and foundations).

Since German public and administrative law makes these distinctions, and as these are particularly relevant to the law of legal deposit, some practical examples are given below in order to clarify the position.

Federal government:	Federal Ministry of the Interior. Subordinate office: Federal Statistical Office, Wiesbaden.
Province ('Land'):	Hessian Minister of the Interior, Wiesbaden. Subordinate office: Regional Office for Protection of the Constitution, Wiesbaden.
Municipality:	Department of Science, Arts and Education for Frankfurt am Main. Subordinate office: Public Library, Frankfurt am Main.
Public Corporation:	Federal Bar Council, Bonn.
Public Institution:	German (National) Library, Frankfurt am Main.
Public Foundation:	Prussian Cultural Foundation.

(*b*) *Groups*

The general heading 'official documents' may be sub-divided into two groups:

1. fully official documents
2. semi-official documents

Fully official documents are issued entirely by an authority or other public body.

Semi-official documents are merely commissioned by a public body.

The wording of the title will indicate to which category the document belongs. Material issued by private organizations working in close collaboration with a public authority is also classed as semi-official.

There is no central agency in the Federal Republic for the printing, distribution and sale of official publications. Format and content of these publications is left to the discretion of the issuing body. Many official publications in the Federal Republic are published by commercial publishers (e.g. Kohlhammer publishes for the Federal Statistical Office).

II. THE MOST IMPORTANT CATEGORIES OF OFFICIAL PUBLICATIONS

The following categories are recognized: 1. federal gazettes; 2. publications of the legislature; 3. of the administration; 4. of the judiciary; 5. of other public bodies (corporations, institutions, foundations). These categories apply at federal, regional and municipal level. The publications listed below as typical of their category are all issued by federal institutions, although comparable publications are issued by regional and municipal institutions.

1. Der Bundesanzeiger (Federal Gazette)

This is the official journal of the German Federal Republic, issued by the Federal Minister of Justice. It contains public announcements concerning laws, regulations, articles of association, statutes and treaties. Published 5 times a week since 1949 (Tuesday–Saturday) with quarterly subject indexes.

2. Publications of the legislature

(a) Das Bundesgesetzblatt (Federal law gazette)

Issued by the Federal Minister of Justice and containing laws which have been constitutionally passed by the parliamentary legislature and which have received the Federal President's assent. There are 3 parts:

Part I contains laws, decrees and general orders. Has appeared since 1949, publication irregular but about 120 annually.

Part II contains international treaties, and decrees and orders having less general public interest. Issued irregularly since 1951. (Parts I and II have an annual index, periodic summaries and a subject index.)

Part III is a compendium of federal laws in force. It is classified by subject and has appeared irregularly since 1958.

(b) Verhandlungen des Deutschen Bundestages (Proceedings of the Federal German Diet)

Parliamentary debates are published after each session with the title *Stenographische Berichte (Shorthand reports)*. Gesetzensentwurfe (bills) and Gesetzensvorschläge (proposals) appear separately in the *Anlagen zu den Stenographischen Berichten (Appendix to shorthand reports)*; they are classed as Drucksache (papers) and are numbered consecutively for each electoral term (Wahlperiode). Annual indexes of subjects and speakers are compiled for both the shorthand reports and the appendix and these are cumulated to give complete coverage of any one

Government's term of office. The overall title for all parts is *Verhandlungen des Deutschen Bundestages.*

(c) Verhandlungen des Bundesrates (Proceedings of the Federal German Council)
Sessions of the Federal Council are also reported in *Stenographische Berichte.* Beschlüsse (orders), Gesetzesentwürfe (bills) and Stellungnahmen des Bundesrates (observations from the Federal Council) are published in the *Anlagen du den Stenographischen Berichten* and classed as Drucksache. Both parts have an annual index of speakers and subjects. The overall title for all parts is *Verhandlungen des Bundesrates.*

3. Publications of the administration

(a) Gemeinsames Ministerialblatt (General Ministerial Gazette)
This has been published at irregular intervals since 1950 and is the official publication for the following ministries: Foreign Office, Ministry of the Interior, Ministry of Health, Child and Family Welfare, Ministry of Housing and Town Planning, Ministry of Internal Relations, Ministry of Education and Science, and Ministry of Economic Co-operation. Each issue has a section devoted to each of these ministries and includes circulars and notices. The *Gemeinsames Ministerialblatt* has an annual index (with periodic summaries, subject index, author index and book review index).

(b) Annual reports (Jahresberichte) of ministries
Generally speaking, ministries do not issue annual reports. However, any such reports are contained in the *Jahresbericht der Bundesregierung (Government Annual Report)*, published by the Presse- und Informationsamt der Bundesregierung (Federal Government Press and Information Office).

4. Publications of the judiciary

The Bundesverfassungsgericht (Federal Constitutional Court) and the supreme courts issue their findings from time to time under the title *Entscheidungen des . . .* (*Decisions of the . . .*), adding the name of the appropriate court. Only the Bundesgerichtshof (Federal Supreme Court) issues its findings in two series, one for civil law and the other for criminal law.

5. Other public bodies

Examples: publications of the Bundesantalt für Arbeit (Federal Institution for Labour) in Nuremberg (public corporation operated by the Federal Government), or the Deutsche Bibliothek (German Library) in Frankfurt am Main (public institution operated by the Federal Government) and of the Stiftung Preussischer Kulturbesitz (Prussian Cultural Foundation) (public foundation operated by the Federal Government).

III. INDEXES OF OFFICIAL PUBLICATIONS

(a) Monatliches Verzeichnis der reichsdeutschen Amtlichen Druckschriften (Monthly List of Official Publications of the German Reich)

This bibliography was the first official specialized bibliography of official publications to appear in Germany. It was produced by the Deutsche Bibliothek in Leipzig and appeared monthly from 1928 (vol. 1) until 1944 (vol. 17, nos. 3/6).

It covers official and semi-official publications of public bodies, whether national, regional or municipal, of municipal associations, public corporations and religious organizations.

The bibliography gives complete coverage to material issued by the national administration. At regional level material for inclusion was left to the discretion of the provincial government. Municipalities with a population of under 50,000 are not included.

In addition to complete items and maps, official announcements appearing in the press were included.

Only the most significant items from legal and ministerial gazettes are included. Parliamentary papers such as bills, estimates, memoranda and important reports are individually listed. Patents are also included. Papers which have a purely local interest, or which deal exclusively with scientific or cultural matters are excluded. In the main these are papers issued by schools, colleges and academies. The bibliography is divided into three main sections: national, regional and municipal. Official publications of the churches are included with the region or municipality.

Semi-official documents are so indicated in the bibliography. Every monthly list has two indexes, subjects and persons, and an annual index covers subjects, persons and authorities. The cumulation of indexes was generally undertaken by the Deutsche Bibliothek.

(*b*) *The period 1945–56*

There is no official bibliography to cover this period. However, all those official publications of the Federal Republic which reached the Deutsche Bibliothek in Frankfurt will have appeared in the weekly lists of the ***Deutsche Bibliographie*** (*German Bibliography*). This bibliography has been issued since 1947, but it covers the period from 1945 and forms the basis of the 6-monthly and 5-yearly cumulations of the ***Deutsche Bibliographie***. In the weekly list official publications are listed in the same alphabetical sequence as any other new publications, and are not separately distinguished.

At this point it is worth mentioning that in 1958 the Library of Congress published a two volume bibliography of German official publications, covering the period 1949–57. This bears the title *German Federal Republic: official publications* and is edited by James Childs. It is confined to federal authorities and institutions and does not include regional or municipal material. It summarizes the work of each authority, its origins and its relationship with earlier authorities.

(*c*) *Deutsche Bibliographie. Verzeichnis Amtliche Druckschriften* (*German Bibliography: list of official publications*)

This is the official bibliography of government publications in the Federal Republic and is compiled and published by the Deutsche Bibliothek in Frankfurt. It has been published biennially since 1957/58 and the issues to date cover the period from 1957/58 to 1967/68. It recognizes as official publications all material issued by authorities and public bodies regardless of content, purpose or aims. It includes the official publications of the Federal Republic and West Berlin, diplomatic agencies abroad, and federal research institutes located outside Germany. Each two-year volume lists the official publications of that period and any previously published material which had not reached the editorial board in time for inclusion in the previous issue. It is a selective bibliography in so far as it excludes drafts, printed forms, internal circulars and administrative instructions. It contains no semi-official publications. Generally speaking, publications of academies, universities, colleges and schools are omitted as these are adequately covered elsewhere. Publications of minor authorities are excluded, also those of municipalities having a population of less than 100,000. Churches and religious institutions are included if they have the status of a public corporation, but even so, only the literature issued by their central authority. On the other hand, a few private corporations are included if they work in very close collaboration with the State. There are two groups of these so-called semi-official bodies:

1. The central associations of public corporations (these are usually registered associations) and their related organizations.
2. Regional or municipal transport or public utility undertakings which are usually privately constituted but whose shareholders are mainly local public corporations.

Within the limitations specified above, the bibliography aims at being comprehensive. Almost everything listed is held by the Deutsche Bibliothek. Very occasionally an out-of-print part of a multi-volume work, series or periodical has to be filled in from bibliographical sources.

The body of the work is divided into four sections—federal, regional, municipal and ecclesiastical—and there is an index. Within these sections regions, municipalities and churches are listed alphabetically. Authorities and other offices in the federal section and its sub-divisions are also listed alphabetically. Every authority and institution having an individual and specific title is listed under that title. All the publications of an authority or corporation are listed alphabetically under the name of that authority or corporation. Publications issued jointly by several offices are given a full entry under the first of these, with references from the others.

The work is supplemented by four indexes: authority index; place index; author, title and catchword index; editor and publisher index. These are conventionally compiled and at present there are no plans for computerization.

(*d*) *Publications lists of individual authorities*

Some authorities issue their own lists of official publications. Typical examples are:

1. *Verzeichnis der Veröffentlichungen des Statistischen Bundesamtes* (*List of publications of the Federal Statistical Office*).
2. *Veröffentlichungen des Deutschen Wetterdienstes* (*List of publications of the German Meteorological Office*).

3. *Amtliche Druckwerke der Deutschen Bundespost* (*Official publications of the Federal German Post Office*).

IV. ACQUISITION OF THE MATERIAL

(*a*) *Deposit copies*

The vast majority of official publications reach libraries under the law of legal deposit. This dates back to 1862 when a law was passed in Prussia giving the Imperial Library in Berlin and the Prussian university libraries the right of acquisition by legal deposit. A special decree was required to cover official publications since the general law of legal deposit had only required private publishers to deposit copies, and public corporations were not regarded as publishers within the terms of the act.

Gradually, and at the insistence of the Commission for Official Publications of the Association of German Academic Librarians (Verein Deutscher Bibliothekare), other German provinces were granted the right of acquisition by legal deposit, from 1900 onwards.

It was not until 1927 that a government decree stipulated that government publications must be deposited in regional libraries and in the Deutsche Bücherei in Leipzig. This decree established the obligatory deposit of official publications of all government departments and it closed a previous loophole in the law by which only private publishers were bound to deposit copies, the term 'publisher' having been deemed to include only privately constituted organizations. The Deutsche Bücherei in Leipzig became the official depository for government publications, with the State Libraries in Berlin and Munich receiving the publications of those departments whose headquarters were located in the north and south of the country respectively.

In the reconstruction of the national administration after 1945 the previously existing law of legal deposit was largely ignored. Its clauses had either become unworkable, or superseded, or were still partially in force. As a result a commission was set up in 1955 under the auspices of the Verein Deutscher Bibliothekare to revise the law of legal deposit to include the obligatory deposit of official publications by both the Federal Government and the regional governments. The commission prepared a draft bill and laid it before the appropriate committees.

Resulting from this draft bill the Federal Government issued a decree in 1958 entitled *Erlass über die Abgabe amtlicher Drucksachen an öffentliche Bibliotheken* (*Decree relating to the deposit of official publications with public libraries*). Federal departments and offices, federal public corporations, institutions and foundations became obliged to deposit with a number of German libraries a free copy of every item published, at the time of publication. This applied not only to material issued directly by the department concerned, but also to any items published commercially under their imprint.

Three central repositories were named: the Deutsche Bibliothek in its capacity as the national archive, the Westdeutsche Bibliothek and the Bibliothek des Deutschen Bundestages. As the stock of the Deutsche Bibliothek is available only for reference and is not normally for loan, the Westdeutsche Bibliothek was designated as the central lending library for government publications, and for this reason the most important publications of foreign governments are also assembled there, using the international scheme for the exchange of foreign publications. The Bibliothek des Deutschen Bundestages has a special responsibility for comprehensive coverage of parliamentary papers. In 1961 an amendment was passed to the federal decree and since then the Bayerische Staatsbibliothek has become a depository for official publications.

Arising out of the principal federal decree of 1958, decrees were passed in all the provinces between the years 1963 and 1971 concerning the deposit of official publications. One or more of the regional libraries were designated as depositories as well as the Deutsche Bibliothek in Frankfurt. Other libraries (the chief of these being the Preussischer Kulturbesitz, the Bayerische Staatsbibliothek and the Bibliothek des Deutschen Bundestages) may only receive official publications on demand.

The decentralized administrative structure of the Federal Republic means that municipalities are not bound by any central decress regarding legal deposit.

In the 1960s the general law of legal deposit was revised. In spite of this revision the decree concerning the deposit of official publications is still necessary. Under the terms of the regional press laws and of the law relating to the Deutsche Bibliothek, publications consisting entirely of official notices are exempt. However, publications of an authority which are not classified as 'official', of whose contents are in part official and in part non-official, are subject to legal deposit under the regional press laws and under the law relating to the Deutsche Bibliothek. Such documents are subject to obligatory deposit in accordance with the regional press laws and the decree concerning legal deposit.

(*b*) *Other means of acquisition*

As the vast majority of official publications reach the libraries by way of legal deposit, other means of acquisition are of little importance.

The Deutsche Bibliothek in Frankfurt does not purchase any official publications, but obtains them all *gratis* under the law of legal deposit. The other depository libraries occasionally add to their stock by purchase. In this context it is worth mentioning the federal decree of 1958 which provided for the acquisition of federal publications required for the international exchange scheme. All federal departments and offices are obliged to supply free of charge up to twenty copies of any publication to the Internationaler Amtlicher Schriftentausch (International Document Exchange Department) at the Preussischer Kulturbesitz. This department organizes the exchange of official publications between the Federal Republic and other countries. The exchange bureau acts as a clearing house, collecting German material and sending it to the appropriate foreign library and requesting foreign material from abroad and passing it on to the appropriate library in Germany.

V. LIBRARIES WITH COLLECTIONS OF OFFICIAL PUBLICATIONS

(*a*) *Deutsche Bibliothek, Frankfurt am Main*

The Deutsche Bibliothek has a legal obligation to collect as comprehensively as possible all German and other language material published in Germany as well as material in the German language published abroad. The library has therefore collected official publications from the time of its foundation in 1946, has conserved them and made them available for reference. In the early years the collection was very incomplete as material was acquired in a haphazard manner. In fact there are still no specific regulations concerning deposit. The law was inexplicit regarding authorities and departments, and voluntary deposit with the Deutsche Bibliothek as operated by the Publishers' Association and its regional agencies was not well organized. By degrees the Deutsche Bibliothek established contacts with the authorities in order to improve its stock of official publications by encouraging voluntary deposit. It was not until the decree of 1958 that public libraries were legally authorized to receive comprehensive collections of federal official papers. By 1971 every region within the Federal Republic had made a decree concerning the deposit of official publications so that, at the present time, a complete collection of regional official publications should be available at the Deutsche Bibliothek.

The Deutsche Bibliothek is also aiming at complete coverage of material issued by municipalities and other public bodies, but this has not yet been achieved.

The Deutsche Bibliothek has set up a department of official publications for the processing of this material. It functions as a bibliographical and editorial unit. It does not carry out its own ordering, accessioning or processing, these functions being undertaken by the main library administration. The department's main functions are to decide which publications fall within its scope and to prepare entries from these for the *Verzeichnis Amtlicher Druckschriften.* The department maintains a catalogue of all official publications received by the Deutsche Bibliothek since 1950. This catalogue, unlike the *Verzeichnis Amtlicher Druckschriften,* is fully comprehensive and nothing is excluded.

(*b*) *Other libraries*

In addition to the Deutsche Bibliothek in Frankfurt, three other libraries collect official publications from all parts of the Republic. These are the Bundestag Library in Bonn, the Bayerische Staatsbibliothek in Munich and the Preussischer Kulturbesitz in Berlin. Whereas the Deutsche Bibliothek is legally entitled to receive automatically a copy of every official publication, the regional libraries only receive them upon demand.

The Bayerische Staatsbibliothek in Munich and the Preussischer Kulturbesitz in Berlin also maintain comprehensive holdings of older material, some dating back to the last century. Finally, it should be mentioned that some regional libraries have collections, which by virtue of regional decrees, date back to before the second world war.

Irish official publications*

Brian McKenna

Assistant Keeper, National Library of Ireland

MODERN IRISH OFFICIAL publications date from the foundation of the Irish Free State and Northern Ireland. Pre-1922 publications may be divided into two categories: papers of the Irish Parliament to 1800 and documents of the revolutionary First and Second Dáil, 1919–21.

Irish Parliament

Statutes, 1310–1800.
House of Commons Journal, 1613–1800.
House of Lords Journal, 1634–1800.
Dublin Gazette, 1703–
Irish Parliamentary Register, 1781–1800.

First and Second Dáil; official records

The following documents, published or re-printed by the Stationery Office at various dates, are still in print:

Dáil Éireann: *Minutes of proceedings of the first Parliament of the Republic of Ireland 1919–21.*
Dáil Éireann: *Official report: debate on the treaty between Great Britain and Ireland signed in London on the 6th December, 1921.*
Dáil Éireann: *Official report*: August 1921, February–June 1922 with index. [Includes index to the two volumes cited above.]
Private sessions of Second Dáil: *Minutes of proceedings 18 August 1921 to 14 September 1921 and Report of debates 14 December 1921 to 6 January 1922.*

Irish Free State, Republic of Ireland 1922–

Glossary
Oireachtas: Parliament
Dáil Éireann: Lower House of Parliament
Seanad Éireann: Upper House of Parliament
Stationery Office: Official printing and publishing Agency.
Also denotes Non-Parliamentary as distinct from Oireachtas (Parliamentary) papers

Language
The official languages of the State are English and Irish. In practice, with very

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* Mr McKenna's paper also dealt with the official publications of Northern Ireland but, for convenience, this part has been reproduced separately on p. 347–51.

few exceptions, only those publications which relate to the Irish language are issued in that language.

Physical form
Most documents have paper covers and the usual height is 14 cm.

CATEGORIES OF PAPERS

1. Oireachtas
2. Stationery Office

1. Oireachtas publications
This term indicates the records and proceedings of Parliament but does not include papers presented to or laid before the Oireachtas. These are:

Acts
Bills (both Houses)
Debates (both Houses)
Reports of Committees (both Houses)
Joint Committee Reports
Divisions (both Houses)
Proceedings (both Houses)
Dáil Éireann Questions
Seanad Éireann Orders of the Day

Acts
Acts are sold as issued but are later published as an annual bound and indexed volume. The usual delay is two years. There have been various consolidated indexes, the most recent in 1970 covering the years 1922–68.

Bills
Bills are published at various stages in their passage through the Oireachtas. Each Bill is assigned a number which it retains in all its editions. They are listed in the general catalogues of government publications but have been omitted from the consolidated catalogues.

Debates
Debates are issued in daily unrevised parts. Corrections suggested by Members are forwarded to the editor and may be incorporated in the bound volumes issued approximately three years later.

Each bound volume is indexed and contains a list of Ministers and Deputies (Dáil Éireann) or Senators (Seanad Éireann). A running number is assigned to each volume, Vol. I of Dáil Éireann beginning in September 1922, Vol. I of Seanad Éireann in December 1922. In December 1973 the unrevised parts of Dáil Éireann reached Vol. 269, those of Seanad Éireann Vol. 76—an indication of the relative importance of the two Houses.

Consolidated indexes

(*a*) *Dáil Éireann*

Index Volume	Debates	Date
I	1–19	1922–27
II	20–68	1927–37
III	69–80	1937–40
IV	81–109	1940–47
V	110–45	1948–54
	146–60	1954–56

(*b*) *Seanad Éireann*

Index Volume	Debates	Date
I	1–20	1922–37
II	21–34	1938–48

Reports of Committees

Oireachtas (Joint)
Dáil Éireann
Seanad Éireann

Committees have usually been assigned the task of examining bills, accounts or some aspect of the internal workings of Parliament. Their number is small: their function is more analytical than investigative; they deal with specific issues rather than general policies.

Analysis can become investigation as was demonstrated by the recent report of the Committee of Public Accounts into Northern Ireland relief expenditure. In the course of this particular inquiry the constitutional powers of Committees to call witnesses and demand information were tested and found wanting.

Other Oireachtas publications record divisions and list the agenda and order of business in the Houses. They are thus of a very technical nature.

2. Stationery Office

Statutory Instruments
Departmental papers

Statutory Instruments

Statutory Instruments or orders made under Acts dominate by sheer numbers the Stationery Office output. An indexed bound edition is available approximately eight years after their first printing.

Sets of collected orders

Volumes	Date	Index volume
1–23	1922–38	24
25–34	1939–45	35
36–9	1946–47	40

Later indexes

1948–60[1962]
1961–63[1965]
1964–70[1973]

Note

The Statutory Instruments Act 1947 regularized the procedure for the issue and printing of orders and led to the publication from 1948 of an indexed bound volume.

Before the implementation of this Act most Statutory Rules, Orders and Regulations, as they were called, were published by the Stationery Office and were available in printed form. The remainder had either appeared in *Iris Oifigiúil* or, being for departmental use, had not been published.

The three sets of collected orders, 1922–38, 1939–45 and 1946–7, were deposited for reference in the following Dublin libraries: Oireachtas Library, National Library, Law Library of the Four Courts and the Libraries of the King's Inns and of the Incorporated Law Society.

Departmental papers

The volume and nature of departmental papers, and the departmental structure itself, have altered little in the past 50 years.

Departmental structure

Department of the Taoiseach 1924
Department of Finance 1924
Department of Justice 1924
Department of Local Government 1924 [1924–47: Department of Local Government and Public Health]
Department of Health 1946
Department of Social Welfare 1946
Department of Education 1924
Department of Industry and Commerce 1924
Department of Posts and Telegraphs 1924
Department of Defence 1924
Department of Foreign Affairs [1924–71: Department of External Affairs]
Department of the Gaeltacht 1956
Department of Transport and Power 1959
Department of the Public Service 1973
Department of Lands 1928
Department of Agriculture and Fisheries 1928 [1928–34: Department of Lands and Fisheries]
Department of Fisheries 1924–28
Department of Lands and Agriculture 1924–28
Department of Labour 1966

Departmental papers

Policy papers
Information papers

Policy

Investigations into social and economic problems may be published by a Department or may appear as the results of the deliberations of a Commission of inquiry. Recent reports have dealt with such issues as agriculture in the west of Ireland, drug abuse and the role of public transport.

In fifty years some 250 such reports have been issued. Their number has tended to fall. Between 1922–25, 30 Reports of Commissioners were published; between 1967–70, there were 13. Many of the early reports with their voluminous minutes are still of considerable importance, for example the Commission of Inquiry into the Resources and Industries of Ireland, 1920–22.

In the context of a relatively small number of policy papers, annual and other departmental serials take on an added importance. Some of these papers continue nineteenth-century British serials: for example, *Report of the Irish Land Commissioners*. In many cases they not only offer invaluable statistical data but also chart changing government and public attitudes where no formal report provides an obvious landmark.

Information

Numbering annually some 200 items, these are of three kinds:

Administrative
Statistical
Scientific and cultural

Administrative

Documents in this class form the largest single category of departmental papers. They range from the minutiae of *Child Health Service School Cards* sold in units of dozens through *Civil Service Examination Papers* and *Custom Tariffs* to the highly important *Estimates and Appropriation Accounts*.

Statistical

Among the serials issued by the Central Statistics Office, an Agency of the Department of Finance, are the following:

Trade Statistics of Ireland
Annual Report on Vital Statistics
Statistical Abstract of Ireland

Departmental annuals contain statistics as appropriate.

Scientific and Cultural

This class is dominated by general literature in Irish—books produced as part of the Government's efforts to foster the Irish language. Other items include *Irish Fisheries Investigations*.

Note

Some departments issue reports in addition to those published by the Stationery Office; for example, the *Career Leaflet Series* of the Department of Labour and the *Monthly Weather Report* of the Meteorological Office.

Indexes

The only major departmental series with a comprehensive index is the Treaty Series of the Department of Foreign Affairs.

Treaty Series 1954. No. 14: *General index to the Treaty Series 1930–53.* [1956.]

Treaty Series 1962. No. 4: *General index to the Treaty Series 1954–60 and list of treaties 1930–60.* [1965.]

Treaty Series 1967. No. 10: *General index to the Treaty Series 1961–65 and list of treaties 1961–65.* [1968.]

State-sponsored bodies

The small number of information papers may be attributed in part to the existence of state-sponsored bodies with ambitious publishing programmes. Amongst these are An Foras Taluntais (Agricultural Institute) and An Foras Forbartha (National Institute for Physical Planning and Construction Research.)

The term 'state-sponsored' is very wide-ranging, embracing private companies assisted by the State, bodies providing a service such as the Irish Livestock and Meat Board or engaged in activities which both private enterprise and the Civil Service are unable or unwilling to perform.

Tracing state-sponsored publications

State-sponsored publications are not issued by the Stationery Office. State-sponsored bodies are listed in the *Administration Yearbook and Diary* published by the Institute of Public Administration, 57/61 Lansdowne Road, Dublin 4.

The major publications find their way into the *British National Bibliography.* Coverage is patchy as is also the case with Stationery Office and other departmental publications.

General indexes published by the Stationery Office

Weekly

Government publications for the week ending the previous Wednesday are first listed in the Friday issue of the bi-weekly *Iris Oifigiúil* (*Official Gazette*), of which an off-print is available from the Stationery Office.

Three-monthly

Published in duplicated typescript form, this is available about two months after each quarter.

Annual

Title: *Annual Catalogue of Government Publications.*

Consolidated

The following consolidated lists have been published: 1922–25, 1926–28, 1929–31, 1932–34, 1935–37, 1938–40, 1941–50, 1951–55 and 1956–60.

Bills and general literature in Irish are omitted from these lists. Statutory Instruments do not appear on the 1951–55 or 1956–60 lists.

Stationery Office catalogues

Bibliographical details

Bibliographical details are minimal: whether Oireachtas or Stationery Office, order number, short title, price and postage charge. Each successive list repeats this information and adds nothing more. No catalogue is indexed. In this context it should be remembered that these catalogues are sale lists and that the needs of the Stationery Office warehouse are paramount.

Stationery Office catalogues in libraries

The role of Stationery Office catalogues in libraries may be considered under two headings:

(*a*) *Finding lists and subject guides*

Despite their obvious drawbacks, Stationery Office lists can be useful as bibliographical tools. The number and limited range of documents and the lack of major changes in the departmental structure make the pattern of official publishing very predictable and thus make possible some kind of crude subject approach. For example, by examining the entries under two headings in nine lists—Reports of Commissioners and Department of Education—it is possible to determine what reports were issued on this subject in the years 1922–60.

(*b*) *Arrangement of material*

Each item in a Stationery Office catalogue has an order or sale number. In the case of a departmental paper the elements of the number consist of a letter indicating the responsible department or agency and a running number for each monograph or serial unit.

For example:

V.8 Ireland in the International Labour Organisation [1965]
V: Department of Labour
8: Eighth publication of this department.

F.45/22: Road fund accounts, 1969–70 [1971]
F: Department of Finance
45: Publication 45 of this department (Road fund accounts)
22: Issue 22 of this publication

Although not printed on the documents themselves, these numbers have been applied consistently from the inception of the Stationery Office in 1922. Libraries maintaining a separate collection of official papers may find them very useful for classification purposes.

Presentation numbers

Parliamentary presentation numbers (P., Pr., Prl.) are not printed in the Stationery Office lists and sometimes do not appear on the documents. The random order their use would produce makes them unsuitable for library arrangement purposes.

Other catalogues

FORD, P. *and* FORD, G. *A select list of reports of inquiries of the Irish Dáil and Senate 1922–72*. Dublin, Irish University Press, 1974. Emphasis is on policy documents, the style and criteria of selection being the same as those made familiar by the various select lists of British government publications by the same authors.

Other sources

British National Bibliography
Irish Publishing Record (Annual), University College Dublin.

Collections of official papers
Good collections of Irish official publications are very scarce. In Ireland the collection in the National Library of Ireland, Dublin, and in Trinity College Library, Dublin, approach completeness. Queen's University Belfast has a good collection from 1945.

In Britain, the best sets are in some of the libraries enjoying copyright deposit privileges such as the British Library, although a growing number of universities are seeking to build up a collection, for example, Southampton University.

Acquisition

Exchange agreements
Ireland has not ratified the UNESCO Conventions concerning the international exchange of publications and the exchange of official publications and government documents between States. There is no national exchange centre and although government departments may enter into exchange agreements with corresponding departments of other countries general exchange agreements may be ruled out.

Purchase
Publications may be purchased from the Government Publications Sale Office, G.P.O. Arcade, Dublin 1. Sets of Oireachtas publications (excluding bound volumes of Acts and Debates) may be obtained by annual subscription at an approximate cost of £10.00. The *Iris Oifigiúil* and several statistical series are also available by subscription. All other items must be ordered from the Stationery Office lists. There are no standing order or deposit account systems.

Acquisition: Selection
Irish official papers are cheap and few in number. The annual cost of a complete collection is under £80. Once the practical difficulties of ordering are overcome (perhaps by ordering every three months), there are considerable advantages to be gained from buying everything or almost everything. Value judgments based on price are minimized and arrangement of the material simplified.

Basic collections
The following is a list of the constituents of a collection that might prove useful

to both the historian and the researcher seeking source materials in the social sciences, law and economics:

Oireachtas publications (by subscription)
Acts (bound)
Debates (bound)
Statutory Instruments (bound)
Central Statistics Office publications (including subscription to Trade Statistics)
Selection of departmental serials on the following lines:

A.1	Annual Report of the Minister for Agriculture and Fisheries
C.6	Annual Report of the Revenue Commissioners
E.2	National Museum. Report of the Board of Visitors
E.22	National Library. Report of the Council of Trustees
E.62	Oideas: Department of Education Journal
F.3	Department of Finance Estimates
F.4	Department of Finance Appropriation Accounts
F.5	Finance Accounts
F.56	Department of Finance Budget
F.72	Directory of State Services
F.75	Annual Review and Outlook
G.10	Sea and Inland Fisheries Report
I.10	Department of Industry and Commerce. Companies Annual Report
J.46	Department of Justice Register of Prohibited Publications
J.61	Report on Crime
J.64	Adoption Board Report
K.24	Department of Local Government Report
L.1	Department of Lands. Irish Land Commissioners Report
X.6	Department of Foreign Affairs. Treaty Series
Z.3	Report of the National Health Council
	Departmental Policy Papers
	Reports of Commissions

REFERENCES

Administration Yearbook and Diary. Institute of Public Administration 57/61 Lansdowne Road, Dublin 4.

Italian official publications*

Alberto Graziani

Head of Informatics Section, Presidency of the
Council of Ministers, Information and Copyright
Services

FOR A NUMBER of political, social and economic reasons, the State has been taking over, during the last few decades, a number of functions that have made it, in point of fact, the protagonist of the country's collective life.

It is inconceivable that, in these circumstances, the State, unlike private groups, should not be provided with suitable means of information, having the precise function of acquainting the public with the ever more vast and complex activities of public administration.

The State has not only the right, but the duty, to inform its citizens of the directions into which its activities are being channelled and the duty to provide them with details of its achievements.

All this presupposes a new requirement, which has its place among the fundamental needs on which the life of a modern nation rests, and which perhaps more than any other typifies it. This is the need for official information coming from the various organs of the State and which, in fact, forms the connective tissue of the whole social existence of our times.

In Italy today, the State, apart from fulfilling its general duty of informing the public on what it is doing and why, must also take the new regional set-up into account.

It cannot be denied, in fact, that the creation of the Regions has given a definitely new configuration to the organization of the Italian State, both in the field of decentralization and of administrative autonomy.

It is therefore necessary to consider as pre-eminent the need to provide an even more organic connection between public opinion and political life at regional and national levels, between citizens and public institutions, between social requirements and the organs set up to interpret and satisfy them.

Indeed, a more conscious participation of the public in community affairs is encouraged by a deeper knowledge and complete body of information on the functioning and practical activity of institutions, public authorities and administrative departments.

To strengthen the citizens' conviction that the political, juridical and administrative structures are there to serve them, it is necessary to facilitate a knowledge of the complex administrative machine, of its laws, regulations and procedures.

This leads to the establishment of a more mature relationship between citizens and public organizations, and, above all, it means placing oneself on a courageous and irreversible course of liberty and democracy.

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* Unfortunately, it has not been possible to include the original-language titles of all the publications mentioned in this paper.

There is no doubt that reliable, responsible and fully documented information has, *per se*, an independent role in social, political and cultural promotion.

Over the last twenty years, the Italian Government has been taking action in this field that has, at times, made rapid and significant progress. In these years, our country has had to tackle basic problems of planning economic and social reforms, yet it has never failed to give attention to the problems of developing the information sector.

But in addition, present-day society cannot be confined within and satisfied by a state that is merely a supplier of information and documentation.

Modern society requires a state capable of promoting and supporting the 'demand for culture' in general, so that the degree of development of a modern nation cannot be expressed exclusively in economic terms but needs cultural ones too. These are the basic considerations on which all the politics of dissemination of information are based in Italy. Along this twofold path of information in the strict sense (as documentation on political and administrative activity) and of cultural information, a whole series of initiatives are being developed through the respective spheres of competence of the individual branches of government.

The range of this survey of Italian official publications will be limited, first of all, to those publications that meet the three following requirements:

1. as far as editing, printing and distribution are concerned, they come under departments or public bodies belonging to the State;
2. the contents reflect, from the point of view of the opinions expressed, only official data and the programmes of government departments or public bodies, considered as institutions of the constitutional system, and these contents do not express opinions to support the activity of single political groups;
3. their distribution is subordinated to all the formal and essential requisites provided for by Italian law for the publication and distribution of printed matter.

In fact, the publication that does not satisfy all these requirements must be considered either as an internal document of an individual administration or as a publication of non-official or semi-official character.

Moreover, no examination will be made of those official publications which, referring to the three fundamental functions of the State, i.e. legislative, jurisdictional and administrative, represent the legal form of publicity provided for by law—since given acts and documents can assume juridical significance as is the case of material published in the *Gazetta ufficiale della Repubblica italiana* (*Official Gazette of the Italian Republic*), in the *Atti parlamentari* (*Acts of Parliament*), and in the official bulletins of the ministries, regions, etc.

Consequently, having assumed these basic criteria, it is now possible to identify with greater precision the category of official publications, as far as this survey is concerned, against the whole vast range of printed matter.

Finally, it is necessary to point out that in Italy there are three main organizations having general responsibility for official publications and performing more specific duties in the public information sector.

In fact, every individual ministry, such as that of Foreign Affairs, of Public

Instruction, of Industry, of Foreign Trade, issues numerous publications to document its own activity, and to promote initiatives carried out in the context of its respective spheres of competence.

But only the Presidency of the Council of Ministers—Information and Copyright Services, the Central Statistical Institute and the State Polygraphic Institute publish and distribute at home and abroad a complete series of documents concerning the general picture of Italian life from the social, economic, juridical and, above all, cultural points of view.

Therefore we will examine the most important periodicals, reviews, yearbooks, etc., issued by the above institutions, taking into account that they are published in connection with the various departments which supply pertinent data.

Let us begin with the Information and Copyright Services. They were instituted in 1948 within the context of the Presidency of the Council of Ministers to meet the need for members of the public to be accurately and impartially informed on government activities and to provide the public authorities' need to know the requirements, problems and trends of public opinion. The Services are organized through two branches: the Information Service and the Copyright Office.

The Copyright Office assumes responsibility for guaranteeing legal protection, at home and abroad, of all literary and scientific work. This entails control of the application of copyright regulations, making sure that the necessary registration measures are taken, calculating fees and charges to be paid for use of copyright, and maintaining a General Public Register of Copyright, which is a complete list of all creative work and, therefore, a mirror of Italian intellectual talent in all fields.

The Office publishes a monthly bulletin, also circulated abroad, which contains all Italian and foreign legislation and regulations concerning copyright, publishing and intellectual work in general, texts of international agreements and conventions, as well as a large section dealing with jurisprudence. This bulletin also gives details of copyright protection afforded to literary works, recordings and engineering designs.

The Information Service provides the main organs of public administration with systematic daily accounts of what is published and broadcast by the national and foreign press and by other mass communication media. To this end it publishes a series of surveys of the Italian daily and periodical press, as well as a survey of the foreign press. To this must be added the daily publication of a radio monitoring bulletin, which contains the main news broadcast by foreign stations.

But the basic means the Service uses to convey topical information is the monthly review *Italy—Documents and Notes*. This periodical contains documentation and information on political, economic and cultural matters, based on data and news derived from public sources, and arranged so as to permit the systematic collection of the articles according to subject.

The review was introduced to the public in December 1951. Originally only 6,000 copies were printed but over the span of a few years the circulation rose to 15,000 copies a month. It is sent to subscribers and, as complimentary copies or in exchange, to appropriate quarters. It may be said that it has accompanied, faithfully recording the outstanding features of public and private initiatives, the progressive stages of Italy's economic recovery. To meet the special needs of a record of Italian life specifically directed to foreign readers four bi-monthly editions of the review have been published since 1953 in English, French, German and Spanish. The contents of the foreign language editions are to some extent matched to the geographical and language zone to which the publication is directed. At present *Vita Italiana* has a circulation of 14,800 copies. The four editions in English, French, German and Spanish have also appreciably increased their circulations.

To meet the expressed wishes of foreign newspapers and journalists, the Information Service has published since 1962 a fortnightly rotoprinted bulletin in four languages, *Italdoc*, on special airmail paper. This bulletin summarizes, in a concise and easily-read style, news on topical events and aspects of Italian life. It also gives adequate coverage to the main cultural events from literature to the stage, and from art exhibitions to sport.

Since January 1967, the Information Service has published every fortnight *L'Informatore Legislativo*. The Service aims with this publication to contribute to a more adequate and widespread knowledge of the complex legislative and normative activities of Parliament, the Government, and the public authorities. With a circulation of 25,000 copies, a figure that tends to rise steadily in an attempt to meet an ever increasing demand, *L'Informatore Legislativo* announces, sets forth, and explains—promptly and with all appropriate references—the legislative provisions of greatest interest to the community. The legislative provisions are numbered and listed under the heading of the Ministry mainly concerned, and according to the specific item relating to the subject; the data are taken from the *Gazetta ufficiale*, to which the reader is referred for the complete text, as and when seems necessary, whereas in scrutinizing the individual provisions reference is made to ministerial and parliamentary reports, as well as to the summarized accounts of the debates held in the two Chambers. Finally a full index by subject and by item facilitates consultation of the individual documents.

Still on the subject of information and documentation for foreign consumption, the Service, using the large quantity of material collected in its photographic archives, started to publish in 1953 a large format rotogravure periodical *Italy*, which illustrates with black and white photographs, accompanied by captions in five languages (French, English, German, Spanish and Arabic), aspects and scenes of Italian life, political events of national importance, the main Italian artistic and cultural events, and so forth. Four colour inserts, depicting Italian landscapes or celebrated works of art, are supplied with each issue.

The publication *Questa è l'Italia*, a slim volume of 125–150 pages with separate coloured plates, must also be mentioned. *Questa è Italia* gives an outline of the situation in Italy as a whole, from historical notes to the geographic description of the peninsula, from general outlines of literature, of art, and of science, to tourism, entertainment and sport. It includes also an overall analytical description of the economic world and of the institutes that govern and safeguard it. A large part is devoted to a description of, and commentary on, the Italian constitutional system. This publication has also been translated into a number of languages.

As for cultural information, a monthly review of bibliographic information, *Libri e Riviste*, has been published since 1948. This is distinguished—and it will continue to keep its distinctive character—from other similar publications by the breadth of its bibliographic data. In this it is especially helped by being able to use the copies that have by law to be sent to the Service for record purposes. In addition to its bibliographic bulletin of all non-periodical publications received, the review provides a selection of the books of greatest interest and appeal on political, economic, legal, historical, literary, scientific and cultural subjects, and a large selection of almost all the Italian periodicals of any significance. Moreover, with articles from outside contributors and editorial notes, it contributes to cultural documentation (data on the production and exportation of books, information on authors, profiles of publishing firms and publishers' series, etc.) and to the current debate on present-day problems of publishing and book distribution. This review is sent by subscription, or as complimentary copies, to libraries and universities, bookshops and publishers' agents, writers, cultural bodies and Italian scholars abroad.

Since 1957, the periodical has appeared under a new name, *Libri e Riviste d'Italia,* and format (200-page volumes) but with the same monthly frequency. Since January 1958, as a result of a proposal that had been under study for some time by the National Book Commission for the publication of a 'Repertorio di informazione bibliografica per l'estero', the new Italian edition has been flanked by four foreign editions, in quarterly volumes, specifically conceived for abroad: *Italian Books and Periodicals*; *Livres et Revues d'Italie*; *Libros y Revistas de Italia*; *Bücher und Zeitschriften Italiens.*

Libri e Riveste d'Italia must be considered as a publication aimed at promoting information at home and abroad on Italian book production, but it does not have the genuine features of an official bibliographic bulletin. The Central National Library in Florence is responsible for applying the Universal Decimal Classification to books published in Italy. It publishes the *Bibliografia Nazionale Italiana,* which contains bibliographic details of each volume reaching the Library under legal deposit arrangements, accompanied by the relevant classification according to the Universal Decimal Classification. In addition, at the Central National Library in Rome, there is the Centro Nazionale per il Catalogo unico delle biblioteche italiane e per le informazioni bibliografiche, which is at present engaged in drawing up the first union catalogue of Italian libraries.

Passing on to analyse official statistical publications, it is first of all necessary to mention the centralized Italian statistical system, headed by the Central Institute of Statistics (ISTAT). This institute has a statutory obligation to compile statistical data on the population, and on the economic and social life of the country. ISTAT, in addition, carries out, through its central and branch organizations, all kinds of statistical surveys, even of a specific nature, on behalf of individual departments and government bodies; it also makes statistical results available within the country and, in co-operation with the Ministry of Foreign Affairs, supplies international bodies and foreign administrations with data and information requested by them.

Numerous publications are issued by the Central Statistical Institute, some monthly, others yearly, others still referring to the general census of the Italian population. Particular mention must be made to the series of *Statistical Year Books*, that present each year, in an up-to-date and comprehensive way, an outline of statistical information, accompanied by graphs and figures, development curves, etc., on the most important sectors of national life, such as industry, agriculture, public instruction, health, trade, work and emigration.

In particular, the *Year Book of Cultural Statistics* must be mentioned. This publishes, in the first section, statistical data regarding book production, the periodical press and libraries: in the second section data regarding the various forms of entertainment, including broadcasting and television; finally, in the third section it gives data on academies and cultural bodies, the state archives, archaeological and art institutions, museums and copyright.

The other organization in Italy that has overall competence regarding official publications, not least with regard to printing and distribution, is the Istituto Poligrafico dello Stato. This institute, in fact, has as its duty the production and supply of the paper, stamps, paper money, printed matter, publications, forms etc. for government authorities; it prints the *Official Gazette* and the *Official Collection of Laws and Decrees of the Italian Republic*, as well as other official government publications; it also produces publications of a legislative kind, collections and extracts of laws and official deeds, and the like. In addition, it publishes and sells works having particular artistic, literary, scientific or general cultural character of national importance and interest.

Cultural matters are looked after by the Libreria dello Stato, an organization of the Poligrafico dello Stato, which has been in operation since 1923. It is one of the most important publishing undertakings in the world, both for the technical perfection of its publications and for the cultural contribution it makes at the highest level. The series on archaeology, history of art, architecture, history, literature, philosophy and bibliography forms one of the most comprehensive and important collections of studies in international publishing. Of outstanding interest are the series, published in co-operation with the Ministry of Foreign Affairs, called *Opera del genio italiano all'estero* and *Documenti diplomatici italiani dal 1861 al 1943*.

In the bibliographic sector, an important collection of *Indici e cataloghi delle biblioteche italiane* offers an almost complete inventory of valuable manuscripts and rare editions in the possession of Italian libraries.

Having examined in very broad outline the publishing and information activities carried out by public institutions, it now only remains to conclude with some remarks on the practical difficulties that exist regarding the collection, classification, conservation, and utilization of such a large number of publications, especially in relation to their contents which cover a wide and very diverse range. The Information and Copyright Services, in the context of these problems, have for some time had a documentation section to look after the selection and listing of articles and notes of the widest interest appearing in Italian newspapers and periodicals, as well as Italian and foreign documents and official publications. They are collected in the Historical and Political Archives, which are equipped with a card index and a catalogue arranged by subject.

A newspaper and periodical collection gathers and card indexes all Italian daily and periodical publications (about 9,000 titles). A very wide choice of periodicals of historic, economic, juridical, political and general cultural interest (about 4,000 titles) are collected and kept for consultation, together with the major daily and periodical illustrated Italian magazines, and some of the main foreign dailies. There are also collections of parliamentary records, of press reviews and of the Service's own periodical publications. In the reading room numerous works are on display for consultation, together with periodical publications of European interest; European Community Year Books, etc.

The Service's Library, apart from cataloguing and keeping a wide choice of books on political, historical, juridical and sociological subjects, keeps the main collections of official government publications, especially in the legislative sector.

But to tailor the Information Service of the Presidency of the Council of Ministers more closely to the requirements of up-to-date and efficient operation, consideration is being given to the setting up of an information system which, through the press offices of the various ministries and of the other State institutions, as well as the Regional press offices, can make a complete set of data and records available not only to the Government but also to those who need information on the State's activities and on the main events and achievements of the country's life.

This system of information, which must avail itself of the most advanced technical aids, among which must be included a computer centre, will form the necessary prerequisite not only for co-ordinating the various publishing initiatives—at least those in the information sector—pursued by the individual departments, but will also establish new and closer relations with similar foreign organizations and international agencies, and first and foremost with those operating in the context of the European Community.

Official publications of the Grand Duchy of Luxembourg

Liliane Clement

Librarian, Service central de la statistique et des études économiques

A. General survey

THIS DOCUMENT IS only a first attempt at providing a brief description of the official publications of the Grand Duchy of Luxembourg. In order to repair the omissions and errors in this survey, it would be necessary to send a questionnaire to the various administrations, which would enable us to fill in some considerable gaps in administrative information.

(*a*) *Lists of official publications*

In the Grand Duchy of Luxembourg, there is no complete list of publications produced by the different government departments. However, a summary of official publications can be obtained by consulting the *Bibliographie luxembourgeoise* which is published annually by the National Library (see No. 10). This bibliography records publications printed or published in Luxembourg.

In 1970, the Service central de la statistique et des études économiques (Statec), whose publications account for most of the official documentation on statistical and economic matters, published a *Répertoire analytique des publications du Statec* (see No. 33). This list, which is updated every two or three years, contains all publications which have appeared since the creation of the official statistical service in 1900. It also surveys the periodical literature.

(*b*) *Libraries with good collections*

The National Library has legal deposit rights for everything printed in Luxembourg. It is the only library which has a complete collection of all Luxembourg official publications and which has loan arrangements with foreign libraries.

(*c*) *Distribution of publications*

The name of the distribution service is given in the descriptions of the various publications which follow. Many official publications are free. 1974 prices are quoted for those which are sold. An alphabetical list of the addresses of distribution centres is provided in the Appendix.

B. Parliamentary papers

These cover the publications produced by the Chambre des Députés while in session. Each year, the Chambre des Députés meets in ordinary session on the second Tuesday in October. Although there is no limit to the duration of a session, it normally lasts until July of the following year.

(*a*) *Projects et propositions de lois* (*Bills*)
Usually collectively referred to as parliamentary documents. Each document bears a current number. A bill introduced by the Government is called a *projet de loi* (draft law) while a bill introduced by parliament is called a *proposition de loi* (proposed law), the latter being much less frequent than the former.

Contents. Text of the draft or proposed law, accompanied by a statement of its purpose, a commentary on the various clauses, the advice of the Conseil d'Etat, the report of the commission to which the Chamber had referred the draft and, if necessary, the advice of the Conseil économique et social, the Inspection générale des finances, the various professional bodies, etc.

The bill relating to the budget is a fairly voluminous document drawn up by the Ministère des Finances (see No. 50).

Distribution. Service central des imprimés de l'Etat. Subscription: 1050 L. Frs.; 750 L. Frs. without draft budget.

(*b*) *Compte rendu des séances de la Chambre des Députés* (*Proceedings of the Chamber of Deputies*)
Annual. Published by the Greffe de la Chambre des Députés about two years after the close of each session.

Contents. Volume I: Introduction (retrospective account of the composition of the Chamber and of the Government, results of parliamentary elections, etc.). Full report of the debates. Analytical table of contents. Volume II: Appendixes—Parliamentary documents (see (*a*) above). Analytical table of appendixes. Summary of legislative acts dealt with in the course of a session.

Distribution. Service central des imprimés de l'Etat. Price: 300 L. Frs.

(*c*) *Compte rendu analytique/Kurzgefasster Sitzungsbericht*
Distributed free of charge once or twice a month to all voters.

Contents. Summary report in German of the debates.

Distribution abroad. Chambre des Députés. Free.

(*d*) *Rôle des affaires*
Annual, with updating supplements.

Contents. List of draft and proposed laws submitted to the Chamber but not yet dealt with. List of commissions. List of reporters. List of authors of proposed laws.

Distribution. Internal.

C. Administrative publications

These cover the periodicals and series published by the Luxembourg administration either on its own responsibility or with its financial support, but do not include publications (few in number) issued by communes, educational institutions and religious communities.

Publications are arranged by ministry and then by department and establishment, following the order used in the *Annuaire officiel d'administration et de législation* (see No. 3).

MINISTÈRE D'ETAT

Service Central de Législation

1. Mémorial
The *Mémorial* is the official journal of the Grand Duchy of Luxembourg. It is published in three separate volumes, each with its own pagination.

Mémorial A: Recueil de législation
Dates from 1814. This volume contains legislative acts and orders. Annual alphabetical and chronological indexes.

Mémorial B: Recueil administratif et économique
Published separately from Section A from 1962 onwards. This volume contains the following texts: individual administrative acts, circulars, notices, abstracts and miscellaneous information.

Mémorial C: Recueil spécial des sociétés et associations
Dates from 1915. This volume contains the constitutions of companies, acts modifying the statutes, liquidation acts; nominations, resignations, dismissals of administrators, commissioners, liquidators, managers; names of partners, company balance-sheets; notices relating to the issuing, announcement, availability and public sale of company shares; calling of general meetings. Annual alphabetical index.

Subscription at post offices.

Distribution abroad: Imprimerie V. Buck. Subscription: A and B: 866 L. Frs., C: 2,100 L. Frs.

2. Pasinomie luxembourgeoise
Dates from 1917. Half-yearly publication constituting an abridgement of *Mémorial A.*

Distribution Imprimerie V. Buck. Price varies.

3. Annuaire officiel d'administration et de législation
Published at irregular intervals. This yearbook provides a general description of the Grand Ducal Court; the foreign affairs of the Grand Duchy of Luxembourg; functions, compositions, staff and legislation of the Chamber of Deputies, the Government, ministries and public services under their jurisdiction, of the Council of State, the Audit Office, the Economic and Social Council and of the professional bodies; the judicial system; the Constitution.

Distribution. Service central des imprimés d l'Etat. Price of 1971 edition: 276 L. Frs.

4. Code administratif
Two loose-leaf volumes published in 1967. Updated annually. Legal and administrative texts.

Distribution. Service central des imprimés de l'Etat. Price: 365 L. Frs.

5. This service also publishes small collections of legislation on specific subjects of administrative interest, e.g. the Constitution of the Grand Duchy of Luxembourg (in three languages), collection of legislation covering civil servants.

Distribution. Service central des imprimés de l'Etat. Price varies.

Service information et presse

This service maintains relations between the Government and the Luxembourg press, the foreign press, broadcasting and television, press agencies and foreign correspondents.

All publications produced by this service are free and can be obtained simply on request.

6. Bulletin de documentation

Dates from 1944. Produced every one or two months. This bulletin reviews the economic, political, social and cultural activities of the Government, official ceremonies, new legislation, and important events taking place in the country.

7. General information leaflets published in three languages (German, English, French) in the series entitled *Connaissance du Luxembourg.* Irregular publication.

8. Documentation leaflets on more particular aspects of the Grand Duchy of Luxembourg, e.g. the integration of foreign workers. Irregular publication.

9. Notes documentaires

Date from 1973. Several issues per month. These notes summarize the activities of the different ministries, important new laws and a wide variety of statistics on public and private organizations.

MINISTÈRE DES AFFAIRS CULTURELLES ET DES CULTES

Bibliothèque Nationale

10. Bibliographie luxembourgeoise

Published annually since 1944, announcing publications received by the Bibliothèque nationale which are published or printed in the Grand Duchy, written by Luxembourg nationals or concerning the Grand Duchy. These publications include: new works; maps and atlases; musical scores; new periodicals as well as those which have ceased to appear or which have changed their title, editor, address or frequency of publication; records; signed periodical articles and papers with scientific value or concerning local history and folklore. Classified arrangement. Author and subject indexes.

Distribution. Bibliothèque nationale. Price 200 L. Frs.

11. Bibliographie annuelle de l'histoire luxembourgeoise

Dates from 1964

Distribution. Bibliothèque nationale. Price: 80 L. Frs.

12. Catalogue des acquisitions du fonds général

Published annually since 1972. This catalogue lists all publications acquired by the Bibliothèque nationale which do not form part of the Luxembourg collection (see No. 10).

Restricted distribution.

Archives de l'etat
The state archives include both historical and administrative archives.

13. Série: Inventaires des divers fonds (Lists of collections)
Irregular publication.
Distribution. Archives de l'Etat.

Institut Grand-Ducal
The aim of the Grand Ducal Institute is to promote the sciences, literature and the fine arts. There are currently six sections, each with its own publication.

14. Publications de la section historique
Date from 1846. 84 volumes have appeared. Historical and archaeological studies of the Grand Duchy and the former country of Luxembourg.
Distribution. Sold at bookshops. Price varies.

15. Archives
Date from 1853. New series from 1906 onwards. Annual. Studies to promote progress and the propagation of the sciences.
Distribution. Institut grand-ducal, section des sciences naturelles, physiques et mathématiques. Price varies.

16. Bulletin de la société des sciences médicales
Dates from 1864. Appears two or three times a year. Articles aimed at keeping doctors up to date.
Distribution. Institut grand-ducal, section des sciences medicales. Price varies.

17. Bulletin linguistique et ethnologique
Dates from 1953. 18 bulletins have appeared. Linguistic studies in general, studies of Luxembourg patois, folklore, surnames and Luxembourg toponymy.
Distribution. Institut grand-ducal, section de linguistique, de folklore et de toponymie.

18. Luxemburger Wörterbuch (Luxembourg Dictionary)
Dates from 1950. Dictionary of Luxembourg patois published in instalments of about 20 pages. Has reached the letter T.
Distribution. Sold in bookshops.

19. Série de monographies sur des artistes et écrivains luxembourgeois
Irregular publication. Two volumes have appeared. The section on literature and the arts stopped publishing its bulletin entitled *Arts et Lettres.*
Distribution. Sold at bookshops. Price varies.

20. Publications de l'Institut grand-ducal—section des sciences morales et politiques
Date from 1970. Irregular publication. Two volumes have appeared. Studies of general interest or dealing with Luxembourg. There are three sections: philosophy; social, political and economic science; legal science.
Distribution. Librairie du Centre, 49 Bd. Royal, Luxembourg. Price varies.

MINISTÈRE DES AFFAIRES ÉTRANGÈRES

21. Corps diplomatique accrédité au luxembourg
Loose-leaf volume. Updated annually.

Distribution. Ministère des affairs étrangères, service du protocole. Price: 100 L. Frs.

MINISTÈRE DE L'AGRICULTURE

22. Rapport sur l'agriculture et la viticulture. Débats parlementaires sur le projet de budget
Annual. Economic results of agriculture and viticulture during the preceding financial year and forecasts for the current year.

Restricted distribution. Ministère de l'agriculture.

Administration des services techniques de l'agriculture

23. Annuaire météorologique et hydrographique
Daily observations made by meteorological stations, daily water levels at the various stations, height and flow of the different lakes, temperature of the water measured at the different stations.

Distribution. Service de la météorologie et de l'hydrographie. Free to libraries.

24. Service des laiteries—Inventaire de la situation
Annual. Production, consumption, exports and imports of dairy products, various statistics.

Restricted distribution. Service des laiteries.

Caisses de maladie et de pension agricoles

25. Compte rendu
Annual.

Restricted distribution. Caisses de maladie et de pension agricoles.

MINISTÈRE DE LA VITICULTURE

Station viticole de l'Etat

26. Das Weinjahr und seine Ernteergebnisse (The Wine Year and Results of the Harvest)
Annual. Meteorological information. Information on wine quantity and quality. Results of the must analyses.

Distribution. Station viticole de l'Etat. Free.

Marque nationale du vin Luxembourgeois

27. Rapport sur l'année viticole
Contains tables of the wines submitted and approved for the national brand.

Distribution. Marque nationale du vin luxembourgeois. Free.

MINISTÈRE DE L'ECONOMIE NATIONALE DES CLASSES MOYENNES ET DU TOURISME

Service central de la Statistique et des études économiques (STATEC)

In 1970, Statec published an analytical list of the publications it has produced since the creation of the official statistical service in 1900 (see No. 33).
Distribution of all publications: Statec—Service des Publications.

28. Indicateurs rapides
These up-to-date indicators include several series and are made rapidly available to users in the form of loose sheets. Subscription: 300 L. Frs.
Series A: Consumer price indexes.
Series B: Industrial production indexes and construction index.
Series C: Other indicators (employment, steel industry, finance, etc.).
Series D: Motor car and new utility vehicle registrations.
Series E: Births, marriages, divorces, deaths.
Series F: Road accidents.
Series G^1: Building permits. New building and complete reconstructions.
Series G^2: Planning permission. New houses.

29. Notes trimestrielles de conjoncture
Date from 1971. Duplicated notes of about 20 pages published in February, August and November. Subscription 200 L. Frs.

30. Bulletin du Statec
Dates from 1963. 8 to 10 issues p.a., each of about 30 to 40 pages.
Subscription: 400 L. Frs.

Economic indicators, results of statistical surveys, studies of the economic situation and economic problems of Luxembourg, statistical studies, report on the activities and work programme of Statec.

31. Cahiers économiques
Date from 1951. 2 to 3 issues per annum. Subscription: 300 L Frs.
These economic booklets are in 4 series:

Series A: Annual Studies of the Economy of Luxembourg.
Contents. Study of the economy of Luxembourg during the course of the previous year, survey of the international market, main economic policies, bibliography on the economy of Luxembourg.

Series B: National Accounts.
Contents. Tables and commentaries on the national accounts of Luxembourg with some brief background information, studies of the problems arising from the national accounts of Luxembourg, short glossary of the national budgetary system.

Series C: Surveys of Industry.
Irregular publication. 6 issues have been published.
Contents. Retrospective analysis of the different industrial sectors.

Series D: Miscellaneous Studies.
Irregular publication. 5 issues have been published.
Contents. Studies in depth on special questions concerning Luxembourg.

32. Statistical Yearbooks

(a) Annuaire statistique
Dates from 1949. Annual since 1968. Price: 350 L. Frs., retrospective yearbook: 500 L. Frs.

Contents. Very extensive documentation on the demographic, economic and social structure and development of the country. Data for the last ten or fifteen years as well as for some reference years. Part 2 gives some international statistics.

The 1960 and 1973 yearbooks are retrospective yearbooks, showing long-term trends giving population and steel industry figures back to the 19th century. These two yearbooks are also different in as much as they have a greater number of statistical tables.

(b) Le Luxembourg en chiffres
Annual statistical leaflet. Free.

Contents. Main statistical data on the Grand Duchy of Luxembourg. The leaflet is published in four languages (German, English, French, Dutch).

This series also includes a set of statistics for each commune (published in 1967; a new edition is expected in 1975) and an album of graphs on the economy of Luxembourg (1967).

33. Définitions et méthodes

No. 1. Législation statistique luxembourgeoise
3rd edition 1970. Updated annually. Restricted distribution.
Vol. 1: Laws and regulations of Luxembourg.
Vol. 2: International regulations in force in Luxembourg.

No. 2. Notations de comptabilité nationale. Syllabus et exercises
4th edition 1970.

Contents. Theory and technical aspects of the national budgetary system. Use of the national budgetary system.

No. 3. Répertoire analytique des publications du Statec
2nd edition 1970. Updated annually.

Contents. Publications produced since the creation of the official statistical service in 1900.

No. 8. Répertoire des producteurs luxembourgeois
3rd edition 1973.

Content. Companies according to field of activity, alphabetical list, maps of the communes indicating the location of the big manufacturing companies.

This series includes other publications which have not, however, been brought up to date for some years. Price per volume: 100 L. Frs.

34. Recensement de la population

This series covers the results of the 1960, 1966 and 1970 population censuses.

Caisse de maladie des professions indépendantes

35. Compte rendu annuel (Annual Report)
Restricted distribution by the Fund. Free.

Caisse de pension des artisans

36. Compte rendu annuel (Annual Report)
Restricted distribution by the Fund. Free.

Caisse de pension des commerçants et industriels

37. Compte rendu annuel (Annual Report)
Restricted distribution by the Fund. Free.

Service gouvernemental d'expansion industrielle
Each year, this Department produces well-illustrated tourist leaflets. In collaboration with the National Tourist Office, it distributes the documentation produced by this office (see below) as well as the *Guide du marché luxembourgeois* in collaboration with the Chamber of Commerce (see No. 89).

Office National du Tourisme
Non-profit making association financed mainly by the Ministry of Tourism. The Office distributes all its annual publications free of charge in four languages (German, English, French, Dutch) except for its annual report which is produced in French only.

38. Rapport d'activité
Summary of the Office's activities. Information on tourism in Luxembourg.

39. Le Grand-Duché de Luxembourg
Tourist information. About 50 pages.

40. Guide des hôtels, auberges, restaurants et pensions

41. Guide des campings

42. Guide des logements de vacances

MINISTÈRE DE L'ÉDUCATION NATIONALE

43. Courrier de l'éducation nationale
Series A: Contains in particular information of interest to teaching staff, appointments and resignations. Irregular publication.

Series B: Each issue contains statistics on a particular type of teaching. About 8 issues per year.

Series C: Collection of school legislation. Loose-leaf volume published in 1968 and brought up to date once or twice yearly.

Series D: Suggested books for school libraries.

Special series: Examination questions.

44. Informations statistiques
About 5 issues a year.

Information on the number of pupils at the different schools made rapidly available to users in the form of loose sheets.

Distribution. Ministère de l'éducation nationale. Service des publications. Free.

45. Horaires et programmes (Time-tables and programmes)
(*a*) Time-tables and programmes. Secondary Education. Annual.

Distribution. Service central des imprimés de l'Etat. Price: 20 L. Frs.

(*b*) Time-tables and programmes. Junior Education. Annual.

Distribution. Ministère de l'éducation nationale. Service des publications. Free.

(*c*) Structures and Programmes. University courses. Annual.

Distribution. Ministère de l'éducation nationale. Service des publications. Free.

46. Enseignement technique et professionnel: degrés inférieurs et moyens
Annual. Information on the various public establishments and the different sections, conditions of admission and advancement, pupil guidance, recommended training courses, entrance examinations.

Distribution. Ministère de l'éducation nationale. Service des publications. Free.

47. Atlas du Luxembourg
Published in collaboration with the Nottingham Geographical Institute. 1st part produced in 1971 (42 pages with 104 maps), 2nd part in 1973 (28 pages with 48 maps). Updated every two years. The maps in the atlas are divided into six sections: historical survey, physical conditions, administrative divisions, economic aspects, social services.

Distribution. Imprimerie Saint-Paul. Service des éditions. Price for 1st part: 900 L. Frs.; 2nd part: 500 L. Frs.

Service national de la jeunesse

48. Informations jeunesse
About 10 issues per year. Scholastic information, information on grants, holiday courses, youth activities.

Distribution. Service national de la jeunesse. Free.

MINISTÈRE DE LA FAMILLE

49. Publications du Ministère de la Famille. Guides de la famille.
Date from 1953. Irregular publication. 14 volumes have appeared. These guides deal with practical, educational, social and moral problems. Most of them are produced in German.

Distribution. Sold at bookshops. Prices vary.

MINISTÈRE DES FINANCES

50. Projet de loi concernant le budget des recettes et des dépenses de l'Etat
Volume I: General survey and detailed commentaries on economic development and budget policy. Ordinary and extraordinary income. Ordinary and extraordinary expenditure of each ministry. Volume II: Government report on economic, financial and social development followed by the advice of the Economic and Social Council. State administrative, functional and economic statistics. Statistics of the social security institutions recognized by the State. Communal statistics.

Distribution. Service central des imprimés de l'Etat. Price: 300 L. Frs.

51. Budget de l'année
The act embodying the budget of income and expenditure as it appears in the *Mémorial.*

Distribution. Ministère des Finances. Free.

52. Das Budget
Annual leaflet in German. Short summary of the State budget for the information of the public.

Distribution. Ministère des Finances. Free.

Caisse d'épargne de l'Etat (State Savings Bank)

Autonomous public body placed under the supervision of the Government.

53. Rapports et bilans (Reports and Balance-Sheets)
Annual. Retrospective survey on international economic, financial and monetary trends. Development of savings in Luxembourg.

Distribution. Caisse d'épargne de l'Etat. Free.

Administration des Postes et Telephones

54. Rapport de gestion
Annual.

Distribution. Administration des postes et téléphones. Free.

55. Annuaire officiel des abonnés au téléphone (Official Telephone Directory)

Distribution. Sold to residents, at post offices. Foreigners must apply to the postal authorities in their own country.

56. Annuaire officiel des abonnés au télex (Official Directory of Telex Subscribers)

Distribution (See No. 55).

57. Procédé sommaire d'envois non périodiques (Concise Procedure governing the Delivery of Non-Periodical Publications)
The Post Office undertake to distribute one copy of any item of printed matter or newspapers which are not addressed or individually stamped to all households, cafés, restaurants and hotels, to all grocers and to all farmers in the Grand Duchy or within the distribution area of a post office.

This brochure contains the conditions of acceptance and a list of the groups of addresses.

Distribution. Administration des postes et téléphones.

MINISTÈRE DE LA FONCTION PUBLIQUE

58. Code de la législation sur les pensions des fonctionnaires de l'Etat (Code of Legislation governing Pensions for Civil Servants)

Published in 1969. Loose-leaf volume updated at irregular intervals.

Distribution. Service central des imprimés de l'Etat. Price: 200 L. Frs.

MINISTÈRE DE L'INTÉRIEUR

59. Bulletin du centre de documentation communale

Dates from 1962. Annual. Studies and laws of Communal administration.

Distribution. Ministère de l'Intérieur. Centre de documentation communale. Free.

Administration des Eaux et Forêts

60. Statistiques forestières

Annual.

Distribution. Administration des eaux et forêts. Free.

Caisse de Prévoyance des Fonctionnaires et Employés Communaux

61. Code de l'assurance pension

Code of pension insurance for local government officials and employees and similar persons. Published in 1970. Loose-leaf volume, updated each year. Price: 300 L. Frs.

Syndicat des Eaux du Sud à Koerich (Southern Waters Syndicate at Koerich)

62. Rapport sur la gestion des affaires

Annual Report on the operation of an inter-Communal water conduit for the Cantons of Capellen and Esch-sur-Alzette.

Distribution by the Syndicate. Free.

MINISTÈRE DE LA JUSTICE

The various codes published by the Ministry of Justice can be obtained from the Service central des imprimés de l'Etat. A new updated edition is planned for the three codes.

63. Code civil et de procédure civile

Published in 1966. Loose-leaf volume. Updated at irregular intervals. Price: 350 L. Frs.

64. Code de la législation commerciale
Arranged and updated by Joseph Kerschen. Published in 1966. Loose-leaf volume. Updated at irregular intervals. Price: 350 L. Frs.

65. Code de la législation pénale
Arranged by Ch. L. Hammes. Published in 1953. Loose-leaf volume. Price: 700 L. Frs. The code has never been brought up to date. A new edition will appear at the beginning of 1975.

66. Pasicrisie luxembourgeoise
Dates from 1880. Quarterly collection of Luxembourg laws on civil, commercial, criminal, public, fiscal, administrative and notarial matters. Founded by P. Ruppert and continued by Paul Ruppert.

Distribution. Palais de Justice. Service Pasicrisie. Price: 180 L. Frs.

MINISTÈRE DE LA SANTÉ PUBLIQUE

67. Bulletin d'information et d'action sanitaires
Dates from 1967. Irregular. 18 bulletins have appeared. Information on the health situation in the country, leading articles on problems of public and social hygiene, reports on the activities of the technical services and consultative bodies of the Ministry of Health, statistics and abstracts on health legislation.

Distribution. Direction de la santé publique. Free.

68. Statistiques des causes de décès (Statistics on Causes of Death)
Annual.

Restricted distribution. Direction de la santé publique.

MINISTÈRE DES TRANSPORTS

69. Législation sur la circulation routière (Traffic legislation)
New edition in 1974. Loose-leaf volume. Brought up to date at irregular intervals.

Distribution. Sécurité routière. Price: 280 L. Frs.

Société national des Chemins de Fer Luxembourgeois (CFL)
Distribution of all publications: CFL.

70. Rapport annuel
Contains data on passenger and goods traffic, technical data, running costs, balance-sheet, profit and loss account. Free.

71. Annuaire statistique
Annual. Information on the length of lines and tracks, rolling stock, staff, technical and financial results. Free.

72. Indicateur officiel (Official Time-table)
Semi-annual. 35 L. Frs.

MINISTÈRE DU TRAVAIL ET DE LA SÉCURITÉ SOCIALE

73. La sécurité social. Lois et règlements
Published in 1968. Loose-leaf volume. Updated at irregular intervals. This collection is in three parts. The first part is devoted to the various sets of legislation, the second part contains the regulations implementing this legislation and the third part deals with social security regulations in the international field.

Distribution. Service central des imprimés de l'Etat. Price: 452 L. Frs.

Inspection du Travail et des Mines

74. Rapport annuel
The Inspectorate of Factories and Mines is designed to ensure, by means of constant supervision, the implementation of the legal provisions and conventions which govern conditions of work and the protection of workers in the exercise of their duties as well as the application of its mining legislation. Its annual report gives an account of its activities. It also contains a summary of the regulations and conventions in force and various statistics, particularly on industrial accidents and the mining industries.

Distribution. Inspection du travail et des mines. Free.

Office National du Travail (National Employment Office)

75. Rapport annuel
Description of the functions of the Office: summary of trends in employment; summary of legislation; statistical tables on vocational guidance, the labour force, unemployment and handicapped workers.

Distribution. Office national du travail. Free.

76. Orientation professionnelle. Rapport d'activité (Vocational Guidance. Progress Report)
Annual. Statistics on those consulting the Vocational Guidance Service and on those taking up apprenticeships.

Distribution. Centre d'orientation professionnelle. Free.

Inspection des Institutions Sociales

77. L'assurance-maladie dans de Grand-Duché de Luxembourg (Sickness Insurance in the Grand Duchy of Luxembourg)
Annual Report. Data on the number of persons insured; income and expenditure; annual balance-sheet.

Distribution. Inspection des institutions sociales. Free.

Office des Assurances Sociales

Distribution of all publications: Office des assurances sociales.

78. Questions sociales
Dates from 1970. Six-monthly review. Subscription: 140 L. Frs.

79. Compte rendu de l'exercice. Association d'assurance contre les accidents. Section agricole et forestière.
Annuale. Statistics, accounts. Free.

80. Compte rendu de l'exercice. Association d'assurances contre les accidents. Section industriel.
(see No. 79).

81. Les prestations familiales au Grand-Duché de Luxembourg (Family Benefits in the Grand Duchy of Luxembourg)
Annual. Free. Summary of the organization of the various schemes, legislation, benefits, financing, financial accounts of the different schemes. Statistics.

82. Compte rendu de l'établissement d'assurance contre la vieillesse et l'invalidité et de la Caisse d'allocations familiales des ouvriers.
Annual, Free. Outline of the organization, legislation and operation of the pension insurance scheme for workers. Financial and statistical results of the Benefit Scheme for Workers' Families.

CAISSE DE PENSION DES EMPLOYÉS PRIVÉS ET CAISSE D'ALLOCATIONS FAMILIALES DES EMPLOYÉS (PENSION SCHEME FOR PRIVATE EMPLOYEES AND BENEFIT SCHEME FOR EMPLOYEES' FAMILIES)

83. Comptes rendus
Annual. Free. Outline of laws and regulations; statistics; financial accounts.

MINISTÈRE DES TRAVAUX PUBLICS

Administration des ponts et chaussées (Department of civil engineering)

84. Publications du service géologique du Luxembourg
Date from 1937. Irregular publication. 23 volumes have appeared. Geological studies on the Grand Duchy of Luxembourg.
Distribution. Sold at bookshops. Price varies.

85. Bulletin du service géologique
Dates from 1968. About one bulletin per year. Very short studies on the geology of Luxembourg and reports on the scientific work carried out by the Geological Department.
Distributed only on an exchange basis.

CONSEIL ÉCONOMIQUE ET SOCIAL

86. Avis du Conseil économique et social
Irregular publication. Restricted distribution. The Economic and Social Council, which was formed in 1966, has the task of studying, either on its own initiative or at the request of the Government, the economic, financial and social problems affecting several sectors of the economy or the economy as a whole.

During the first quarter of each year, the Government submits to the Council a report of the economic, financial and social development of the country as well as an outline of the policy which the Government intends to pursue in these fields. These reports form the basis of an advice by the Council. All these documents are published in Volume II of the *Projet de loi concernant le budget des recettes et des dépenses de l'Etat.* (See No. 50). In 1973, the Economic and Social Council published a volume containing all its advice on the economic, financial and social situation in the country for the period from 1968 to 1972.

CHAMBRES PROFESSIONNELLES

The professional bodies are public institutions. The Chamber of Deputies and the Government are obliged to seek the advice of the professional bodies on all draft legislation which particularly affects the professions which they represent. Luxembourg has six professional institutions: the Institute of Private Employees, Institute of Manual Trades, Chamber of Commerce, Institute of Labour, National Agricultural Council, and the Institute of Civil Servants and Public Employees.

87. Avis des différents chambres professionnelles
These recommendations are duplicated and distributed by the various institutes (restricted distribution). They are also published in the parliamentary documents (see No. 2).

88. Statistiques sur l'artisanat luxembourgeois (*Statistics on Luxembourg Craftsmen*)
Annual.

Distribution. Chambre des métiers. Free.

89. Guide du marché luxembourgeoise. Marché d'importation et d'exportation
Annual. Published in French, English and German. Demographic and economic aspects of the country, legal provisions governing trade, import and export legislation, professional organizations, list of producers and importers.

Distribution. Chambre de commerce et service gouvernemental d'expansion industrielle. Free.

APPENDIX

Addresses of Distribution Centres

Administration des eaux et forêts, 34 avenue de la Porte-Neuve, Luxembourg. Tél. 4 54 61.
Administration des postes et téléphones, Place de la Gare, Luxembourg. Tél. 4 99 11.
Administration des services techniques de l'agriculture, 16 route d'Esch, Luxembourg. Tél. 4 65 21.
Archives de l'Etat, Plateau du St-Esprit, Luxembourg. Tél. 478 1.
Bibliothèque nationale, 37 bd Roosevelt, Luxembourg. Tél. 2 62 55.
Caisse d'épargne de l'Etat, 1 Place de Metz, Luxembourg. Tél. 298 51.

Caisse de maladie des professions indépendantes, 39 rue Glesener, Luxembourg. Tél. 48 50 31.
Caisses de maladie et de pension agricoles, 16 bd d'Avranches, Luxembourg. Tél. 48 81 61.
Caisse de pension des artisans, 39 rue Glesener, Luxembourg. Tél. 48 50 31.
Caisse de pension des commerçants et industriels, 39 rue Glesener, Luxembourg. Tél. 48 50 31.
Caisse de pension des employés privés, la bd Prince-Henri, Luxembourg. Tél. 4 04 61.
Caisse de prévoyance des fonctionnaires et employés communaux, 20 avenue de l'Arsenal, Luxembourg. Tél. 4 01 44.
Centre d'orientation professionnelle, 86 avenue du X Septembre, Luxembourg. Tél. 2 67 93.
Chambre de commerce, 10 bd Roosevelt, Luxembourg. Tél. 47 20 41.
Chambre des Députés, 19 rue du Marché aux Herbes, Luxembourg. Tél. 2 02 22.
Chambre des employés privés, 138 bd de la Pétrusse, Luxembourg. Tél. 48 87 41.
Chambre des fonctionnaires et employés publics, 11 avenue de la Porte-Neuve, Luxembourg. Tél. 47 22 24.
Chambre des métiers, 41 rue Glesener, Luxembourg. Tél. 48 80 51.
Chambre du travail, 18 rue Auguste Lumière, Luxembourg. Tél. 48 86 16.
Conseil économique et social, 33 bd Grande-Duchesse Charlotte, Luxembourg. Tél. 4 21 48.
Conseil national de l'agriculture-Centrale paysanne, 16 boulevard d'Avranches, Luxembourg. Tél. 48 81 61.
Imprimerie St-Paul–Service des éditions, Case postale 1908, Luxembourg.
Imprimerie Victor Buck, 99 route d'Arlon, Luxembourg. Tél 2 30 20.
Inspection des institutions sociales, 10 rue de Strasbourg, Luxembourg. Tél. 48 43 78.
Inspection du travail et des mines, 19 avenue Gaston Diederich, Luxembourg. Tél. 47 33 35.
Institut grand-ducal–Section de linguistique, de folklore et de toponymie, 5 rue Large, Luxembourg. Tél. 2 88 16.
Institut grand-ducal–Section des sciences médicales, 51 avenue de la Gare, Luxembourg.
Institut grand-ducal–Section des sciences naturelles, physiques et mathématiques, 21 rue Large, Luxembourg. Tél. 47 33 22.
Marque nationale du vin luxembourgeois, Remich. Tél. 6 91 22.
Ministère des affaires culturelles et des cultes, 19 Côte d'Eich, Luxembourg. Tél. 478 1.
Ministère des affaires étrangères, 5 rue Notre-Dame, Luxembourg. Tél. 478 1.
Ministère de l'agriculture, 1 rue de la Congrégation, Luxembourg. Tél. 478 1.
Ministère de l'éducation nationale, 12 rue du St-Esprit, Luxembourg. Tél. 478 1.
Ministère de la famille, 17 Côte d'Eich, Luxembourg. Tél. 478 1.
Ministère des finances, 3 rue de la Congrégation, Luxembourg. Tél. 478 1.
Ministère de l'intérieur/Service de la documentation communale, 19 rue Beaumont, Luxembourg. Tél. 478 1.
Ministère de la justice, 27 rue Joseph Junck, Luxembourg. Tél. 478 1.

Ministère de la santé publique/Direction de la santé publique, 1 rue Auguste Lumière, Luxembourg. Tél. 4 08 01.
Ministère de la viticulture, 1 rue de la Congrégation, Luxembourg. Tél. 478 1.
Office des assurances sociales, 1 rue Zithe, Luxembourg. Tél. 4 08 61.
Office national du tourisme, 51 avenue de la Gare, Luxembourg. Tél. 48 79 99.
Office national du travail, 4 rue du Fort Reinsheim, Luxembourg. Tél. 2 67 93.
Palais de la justice, 12 rue de la Côte d'Eich, Luxembourg. Tél. 4 14 64.
Sécurité routière, 64 rue Poincaré, Luxembourg. Tél. 2 09 70.
Service central des imprimés de l'Etat, 19 rue de Hollerich, Luxembourg. Tél. 48 18 72.
Service central de législation/Ministère d'Etat, 3 rue de la Congrégation, Luxembourg. Tél. 478 1.
Service géologique, 13 rue J.-P. Koenig, Luxembourg. Tél. 47 11 06.
Service gouvernemental d'expansion industrielle, 19 rue Beaumont, Luxembourg. Tél. 2 19 21.
Service information et presse/Ministère d'Etat, 3 rue de la Congrégation, Luxembourg. Tél. 478 1.
Service national de la jeunesse, 11 rue Notre-Dame, Luxembourg. Tél. 47 85 55.
Société nationale des chemins de fer, 9 Place de la Gare, Luxembourg. Tél. 4 99 01.
Statec, 48 rue Charles Arendt, Luxembourg. Tél. 2 19 21.
Station viticole de l'Etat, Remich. Tél. 6 91 22.

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Official national publications of the Netherlands*

Th. H. Olthetten

Director General, Staatsdrukkerij, The Hague

IN EVERY MODERN State it is the Government's job to see that its citizens are properly informed on everything it is doing for their benefit and for the community in which they live and work. That is the object of making the Government's actions and activities known to the public. But publicity alone is not enough. Making facts generally known or generally accessible still does not explain *why* the measures concerned have been taken. Some explanation is needed of what lies behind policy decisions, so that the public can see what the consequences will be and how the measures implementing the policy will affect them. Maintaining a government information service used to be regarded as a right that the Government claimed for itself, the right to announce and explain its policy directly to the public. Nowadays, publicity and the provision of information are deemed to be a primary duty of the Government, a duty deriving from the right of the public to receive information, to know what is going on. There are two kinds of government information: active and passive. By 'active' I mean information that the Government provides on its own initiative, and by 'passive' information that is provided in response to a specific request.

Active publicity

The principal instrument used by the Government to publicize its activities is the printed word. Government documents are reproduced graphically in large numbers, and with these printed communication media the Government can approach the public direct and convey information to them. Our concept of the Government need not be restricted to Cabinet Ministers alone; it includes the government departments, services and institutions under them, while even publications emanating from Parliament (of which Cabinet Ministers in this country are not members) are counted as official publications. Official publications can be divided into those intended for internal use and those for external distribution. By publications for internal use I mean those that are primarily intended for government agencies and their servants; the others are intended for distribution among the public.

Both these categories can be further divided into primary and non-primary publications. Primary publications are those that have to appear for purposes of consultation with Parliament in connection with the enactment of legislation, the establishment of State Commissions, etc. Non-primary publications are those that are principally of an informative nature. Active publicity first appears in the form of the official publications which form the basis of the constitutional system. These are the 'Papers laid before Parliament', the resulting exchanges between Parliament and Government, the reports of parliamentary debates and, finally, the Bulletin of Acts, Orders and Decrees in which Acts of Parliament are promulgated.

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* Unfortunately, it has not been possible to include the original-language titles of all the publications mentioned in this paper.

But besides these primary political publications, there are a number of official publications issued by the Government which are not of such a fundamental nature, and are mainly informative. The Government publishes reports from official advisory bodies, memoranda on government policy, and reports on research. The Government provides statistics, gives agricultural information, and arranges for the publication of handbooks for inland shipping. These items are taken at random from a very wide range of subjects indeed. After all, Government responsibility covers every aspect of life. It is from this fact that the Government's duty to provide information over a very wide field is derived.

Information provided by active publicity can be divided into information for elucidating policy and information for increasing the citizen's knowledge. The latter, again, can be divided into factual information, instructive information and educational information. Factual information is given in tax tables, statistics and such things as a report on house-building. Instructive information will be found in such publications as a handbook for tax inspectors or a recommendation on the improvement of cereal yields. Educational information may take the form of publications on the need to conserve energy or leaflets on the abuse of drugs.

Explanations of policy give information on what the Government wants to do and what it is doing. A Bill with an explanatory memorandum is an example, but so is a White Paper on inflation policy. I have given you a few simple examples, but they will serve to give you an idea of the diversity of forms information may take. In a parliamentary democracy we can also divide the external relations of the Government, as expounded in official publications, into what I shall call pre-parliamentary information and post-parliamentary information.

Pre-parliamentary information

The distinction I am making now is connected with the function of Parliament, which is to share in making legislation and to keep a check on government policy. Parliament needs the fullest possible information from the Government if it is to be able to acquit itself properly of its task of keeping a check on government policy. On the basis of that information Parliament invites—or orders—the Government, to justify its policy, applying sanctions if necessary.

In the past, then, the Government's duty was mainly confined to providing information for the man in the street through Parliament. Parliament had a prior right to information, in other words it had the right to be the first to take cognizance of government statements. Pre-parliamentary publications were therefore almost the only channel through which information flowed from the Government to the public. But ideas have changed. Parliament is no longer the informed body representing the people, but the body representing an informed people. Nowadays we regard Parliament as a body representing the people and in duty bound to reflect the sentiments of an informed public. It is the duty of Parliament to note the reactions of public opinion at a very early stage and to take them into account when deciding on its attitude. So pre-parliamentary publications have ceased to be mere working documents provided for the benefit of Parliament, but have at the same time become instruments for conveying information to the public. In pre-parliamentary publications the Government has to state and explain its proposed policy before it can be certain that Parliament will approve it. In view of the fact that Parliament's opinion is shaped during the pre-parliamentary information period, partly as a reflection of public opinion in the country, the Government will want to make sure that the impression of its proposed policy that comes over is not distorted or incorrect. In addition, by releasing the information piecemeal the Government will want to make allowance for Parliament's exclusive position and will want to produce the information at the right time and place and in the right form. Every government is aware that at the pre-parliamentary stage it can by no means always uphold the policy it proposes. One reason is that the policy as announced may turn out to be impracticable and the Government is not willing to take the consequences of adhering to it; another is that the Government may admit, in the light of fresh information emerging from the reaction to its announced policy, that the policy needs modifying.

Releasing information on the whys and wherefores of any such policy changes requires even more care when it comes to choosing the proper time and place and the right form.

Post-parliamentary information

Post-parliamentary information is part of a policy approved by Parliament, or evolves from such a policy. Examples are publications explaining the rights that can be derived from new social laws, the obligations devolving upon us from new taxation legislation, or the opportunities offered to us by a law on credit financing.

Post-parliamentary information activities are not only undertaken *ad hoc*. They often extend over a number of years, because it is often essential that the information be repeated or added to if the desired goal is to be achieved. Repeated publicity is necessary if the public have not understood an approved policy or have not fully accepted it, which is not unlikely in the case of a prices policy or an energy policy. It is also important to continue to provide information if circumstances have changed. As long as a man is working he is not particularly interested in the provisions of the Unemployment Act, but it is a different story if he loses his job.

Much of this repeat publicity is for the benefit of the younger generation. Educational publicity is perpetual, as is information on the rules of the road. The exponential growth of technical and social needs is also causing the demand for post-parliamentary information to increase by leaps and bounds.

Publications of a factual nature such as statistics, tide tables, research reports and annual reports are also considered to be post-parliamentary forms of information. The reports and recommendations of committees set up by the Government, on the other hand, count as pre-parliamentary publications, since they belong to the category of preliminary studies needed to help the shaping of government policy.

Passive publicity

Passive publicity is an important function of the government information services, its object being to grant citizens the right to information. It is not a matter of the Government distributing information on its own initiative, but of allowing citizens access to government documents if they ask for it.

It is outside the scope of this conference to discuss this right to information, as was done in Sweden, for example, a long time ago, and which culminated in the passing of the Freedom of Information Act in the United States in 1967. Nevertheless, we should concern ourselves with official publications not brought to the public's notice by 'active publicity', which often circulate internally, within government circles, in quite substantial mimeographed editions, but which are unknown elsewhere. Sometimes there is a question of official secrecy, essential or desirable, but far more frequently it is simply that there is felt to be no market for such publications and the expense of active publicity is not thought to be justified. Any member of the public who is interested, and who happens to know of the existence of such publications, is allowed access to the information.

Numerous official publications, representing a great deal of work and containing information of value to the public, remain tucked away in civil service archives. Although most of them are not of a secret or confidential nature, these documents do not earn their keep. Making official documents such as these accessible to the public would go a long way to improving the situation.

Bibliography of official publications in the Netherlands

Against the background of these general remarks I should now like to outline the situation in the Netherlands and indicate a few lines along which developments are taking place.

A list of official publications is to be found in the *Bibliografie van in Nederland verschenen officiële en semi-officiele uitgaven* (1924–) (*Bibliography of Official and Semi-official Dutch Publications*) published annually by the Koninklijke Bibliotheek (Royal Library). The most recent catalogue contains publications that appeared in 1969, a total of more than two thousand titles. About half of them are reports issued by research institutes, the vast majority being reprints of scientific contributions to the institutes' reports. The remaining thousand titles, or thereabouts, consist of magazines, books and maps. The bibliography provides a reasonably complete list of publications, but not much more, since the line between official and semi-official publications is not clearly drawn and there are no sub-divisions into different kinds of publications.

The bibliography of official publications does, however, perform a useful function as an inventory, since the Netherlands is one of the few countries without a statutory repository of publications. With regard to official publications the Royal Library at least has a repository with a bibliography of the publications contained in it. But here, too, it is difficult to get any overall impression. Although every reprint of an article in the scientific journal of a research institute is listed in full, you will not find entered in the bibliography the very important and often voluminous White Papers which are part of the annual collection, unless they have been published separately in book form. Major Bills submitted to Parliament by Ministers will not be found in the bibliography either.

I am well aware that I am no authority on documentation, and I therefore hesitate, in the company of librarians, to urge a qualitative approach to the problems I have touched upon. Perhaps I should be discreet and withdraw immediately to my own ground, and take a new point of departure.

Government publishing in the Netherlands

The Staatsdrukkerij (Government Printing and Publishing Office) is the oldest state-controlled enterprise in the Netherlands; for more than a century and a half it has been responsible for graphic communications on the Government's behalf. Until after the Second World War its work was mainly confined to preparing and distributing primary political publications and a few publications containing factual information, such as tide tables and statistics. During the past twenty-five years, however, the amount of information the Government has to provide has increased, so the Government Publishing Office's function as the distributor in the chain of communication between Government and the public has become more and more important. In addition to periodicals, the Dutch Government Publishing Office issues more than 500 new books a year, which reach the public through the ordinary booksellers. The most important change in the Publishing Office's function is not so much the increase in the number of publications as the way in which they are published. The Government Publishing Office acts as financier, bearing the risks, even where there is no immediate prospect of a publication being a profitable, commercial proposition.

This principle applies not only to books but also to primary political publications. *The Proceedings of the States General,* the reports of parliamentary debates, are supplied by the Government Publishing Office to members of Parliament at the same subscription rates as are charged to every member of the public. Nor does the Government bear the cost of publishing the *Bulletin of Acts, Orders and Decrees* or the *Government Gazette,* in which government decrees are published. The publication of books intended for distribution among the public is also made to pay for itself. We decided to adopt this line because publishing is a professional business. The size of editions and the prices of books have to be fixed with a great deal of care and professional knowledge, because there are market and price limits. Inordinately low sales figures have to be avoided by keeping in mind the purpose of the publication and the price optimum, and on the other hand over-production must be avoided.

Formerly nearly all books were accepted by the Government Publishing Office on commission; nowadays by far the majority of publications are published at the Publishing Office's own expense and at its own risk. This has made us refrain, if possible, from overwhelming the public with publications in which there is no real interest.

This policy nevertheless means that many publications are issued in the certain knowledge that they will make a loss. This is necessary because a Government Publishing Office cannot confine itself to commercially successful publications. The usefulness that has to be set against the cost cannot be expressed in terms of money alone. But these publishing losses are balanced by publications that can be commercialized and thus become profitable, sometimes very profitable. A good example is the publication of the *History of the Kingdom of the Netherlands during World War II*, Part I of which appeared in 1969. Part V of the series appeared a few weeks ago and so far more than 500,000 copies have been sold. Though exceptional, this is by no means unique. 150,000 copies were sold of a history of the persecution of the Jews in the Netherlands, published in two parts. These figures were not achieved because of an exceptionally low price, but by intensive study of the book market, which we share with private publishers in this country. Our experience is that normal prices, which leave a margin for ordinary advertising by retail booksellers who distribute our publications, promote sales better than an abnormally low selling price. I should point out that the Government Publishing Office does not place any books with private booksellers at its own risk. Booksellers buy books from us in the normal way and at their own risk. It goes without saying that normal trade discounts must be offered. I am glad to say that the popularity of government publications among the public is increasing. But a publisher must also be prepared to canvass the public and make intensive use of the mailing list. The Government Publishing Office dispatches particulars of forthcoming publications to over a million people a year, and issues a quarterly catalogue of all published titles, which has a very wide distribution.

Even in a small country such as Holland, with a population of thirteen and a half million, it is not so terribly difficult to sell 230,000 copies of the official vocabulary of the Dutch language. We are actually much more satisfied with the sale on the open market of 25,000 copies of a translation of the Pearson Report, *Partners in Development*, that deals with the problems of the developing countries. We sold 27,500 copies of the latest statistical vademecum, but that was nothing like such a job as selling a report on university education. All the same, we managed to sell 22,000 copies of it.

Information function of design

Presentation is a very important factor affecting the popularity of government publications. A Government Publishing Office cannot confine itself to the economics of production and the technique of publishing. The preparation and publication of graphic communications requires an increasing understanding of the phenomena of communication itself, for which the printed page is merely the medium. The form in which the information is conveyed may either enhance or impair the communication process.

This was a point that nobody bothered about in the old days. The general opinion was that official publications could be nothing but extremely formal, which in practice only meant that they were fearfully boring and for this reason alone unreadable. Experience has shown, however, that if information is tastefully presented, it is far more likely to be assimilated and retained. Obviously, professional information officers are making increasing use of this enlightened approach when presenting post-parliamentary publications.

Primary political publications, particularly parliamentary papers, are quite a different story. They are remarkable for the traditional way in which they are published, with total disregard of the communicative function that these important state documents fulfil, and with total disregard of the cultural aspect. This is all the more remarkable if one realizes how tremendously the work of Government and Parliament has increased, and with it the volume of parliamentary publications. In my own country, the volume of the *Proceedings of the States General* has increased by 100% in less than ten years. But nothing whatever has been done to make the *Proceedings* even a little less forbidding, either to members of Parliament themselves or to members of the public interested in what goes on in Parliament. An index to the *Proceedings* does appear, but not until years later.

The whole system is to undergo a complete overhaul from the beginning of the new parliamentary year. Several years of study have produced a completely new layout, a contemporary design which will make all parliamentary papers much more readily accessible. The intention is for every printed document to be provided with references when it is being drawn up, and with an index of subjects and names that can be made almost automatically from them. The work is being facilitated by the development of a new typesetting technology. The Dutch Government Printing Office has put an electronic data processing system into operation for typesetting all parliamentary papers, which reproduces all characters on photographic paper through a Linotron cathode ray tube.

From data reproduction to data processing

Government Printing Offices, which as a sort of extension of the typing pools of government departments used to produce thousands of duplicates of manuscripts, are now developing into data processing industries, which no longer reproduce finished manuscripts but select unprocessed data material, process it and convert it into graphic communication products. Telephone directories, registers of wanted persons and statistics are already being printed by this method. Now that the technology of electronic data processing (EDP) with photographic typesetting as output is available, it is time it was used to make primary political publications readily accessible. Some parliaments are already making use of data processing for preparing indexes to parliamentary papers, and the Committee on Science and Technology of the Council of Europe, in which the representatives of the European parliaments exchange experience and ideas on the problems, is studying possible applications in depth.

In the Netherlands we are working on the principle that parliamentary papers in their final, printed form are the source from which forms of internal and external information are drawn. Members of Parliament, Cabinet Ministers and civil servants, and the interested public all fall back on these papers for their information. After all, they provide the only accurate indication, with page and column number, of the place where each item of printed information is to be found. So the obvious thing to do is provide all documents when they first appear in print with references for a name and subject index, thus enabling composite indexes to be prepared from them. This should be done not only for the reports of parliamentary debates, but also for all Bills with explanatory memoranda, policy memoranda, etc., submitted to Parliament by the Government.

A working group consisting of representatives of both Chambers of Parliament and of the Government Publishing Office are trying to find ways of putting these ideas into practice. I consider these developments to be extremely important, because they will benefit others besides those immediately concerned, particularly librarians. The right of all citizens to information is nothing but an empty phrase unless steps are taken to prevent the information becoming chaotic.

'Information chaos' is created when selective processing of information ceases to be feasible as the mass of information becomes more and more tangled. It is comparable with the traffic on the roads, which has increased to such an extent that it is no exaggeration to say that chaos looms ahead. But the threat of chaos does not bring about any lessening of the volume of traffic; it calls for a series of measures designed to make the system of traffic arteries inside and outside the towns still more sophisticated and improve signposting. By analogy the Government should take steps to help people find their way about in the maze of information. This brings me back to the question of passive publicity.

Individual consumption of official publications

There is an increasing tendency for the Government's work to be performed in public, and the citizen's right to information is receiving statutory recognition. As a consequence, not only will the active information services expand, but what I have called passive publicity will also grow to even greater proportions. John Citizen will no longer be dependent on the information the Government supplies him with, but will have access to the sources, in so far as they have been legally declared open to the public.

Otherwise, the same can be said of these unpublished government documents as of so many government documents actually issued in published form; they offer access but they are not accessible. The door is open, but we can never penetrate the labyrinth inside it. An additional difficulty is that the answers to specific questions cannot usually be found by consulting one particular document. More often than not it is necessary to collect and compare snippets of information from a number of government documents, both published and unpublished. Recognition of the right to information as a material right that springs from a formal right will induce us to use techniques that will enable the public to exercise that formal right. Such techniques are available in the form of the electronic data processing systems, which will make it possible for public information banks to be established. They would contain all non-classified government documents—both published and not for publication, but declared accessible—on microfilm or microfiches complete with reference codes.

The microfilm files would be computer controlled and capable of being immediately consulted, and any information asked for by means of a thesaurus (a keyword index) would be presented to the applicant visually on a monitor. Those seeking information could select what they wanted and take photostat copies of the relevant items away with them. A private collection of pieces of information such as this might also be called an official publication. After all, why should information only be offered in prefabricated form?

If technical aids are capable of offering almost infinite permutations of personally selected information, it would seem a pity not to use them. The Government Publishing Office is examining the possibility of offering this service to the public. We do not believe this would result in any check in the growth of printed official publications; all we wish to do is offer an additional service in the form of official publications tailor-made for the consumer. Why should it always be considered efficient to dish up a dinner of information before consulting the menu?

British Librarianship and Information Science 1966–1970

EDITED BY H. A. WHATLEY

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THE LIBRARY ASSOCIATION

Official publications of Northern Ireland*

Brian McKenna

Assistant Keeper, National Library of Ireland

Institutions

Parliament 1921–72
House of Commons
Senate: Upper House
Assembly 1973–

Physical Form of Papers

Most documents have paper covers, and the usual height is 14 cm.

CATEGORIES OF PAPERS 1921–1972

1. Parliamentary papers
2. Non-Parliamentary papers

1. Parliamentary papers

Papers relating to the proceedings and activities of Parliament
House of Commons Papers
Senate Papers
Command Papers

The main publications in the first category are:

Acts
Bills
Debates
Journals
Notices of Motion and Orders of the Day

Acts

Acts were issued as published and also as an annual indexed volume.

Debates

Debates of both Houses were issued in two forms: in daily parts and in sessional indexed volumes. At date of prorogation, 84 House of Commons and 56 Senate Sessional Volumes had been published.

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* This paper was delivered by Mr McKenna following his paper on Irish official publications which is reproduced on p. 304–12.

Indexes
Index to the Statutes in force in Northern Ireland to 31st December 1969. [1971.]

Chronological Table of the Statutes, Northern Ireland to 31st December 1969. [1971.] The tenth [1961] and subsequent editions of this index include all public statutes in force and affecting Northern Ireland passed by the Parliament of Ireland and the Parliament of Great Britain (prior to 1801), the Parliament of the United Kingdom, and the Parliament of Northern Ireland. Previous editions related to Acts of the Parliament of Northern Ireland.

Journals: general index

House of Commons:

Vol. 1, 1921–Vol. 12, 1930
Vol. 13, 1931–Vol. 23, 1940
Vol. 24, 1941–Vol. 34, 1950
Vol. 35, 1951–Vol. 44, 1960

Senate:

Vol. 1, 1921–Vol. 11, 1930
Vol. 12, 1931–Vol. 22, 1940
Vol. 23, 1941–Vol. 33, 1950
Vol. 34, 1951–Vol. 43, 1960

Journals, Notices of Motion and Orders of the Day were issued as indexed sessional volumes.

Senate Papers
Twenty-one Senate Papers were published: the majority consisted of reports on bills.

House of Commons Papers
House of Commons Papers with Command Papers formed the kernel of Stormont official publications. Issued in one numerical sequence they comprised the following:

Accounts, including Estimates and Appropriation Accounts. For example: H.C. 1998: Redundancy fund for the years 1968–9. [1970.]

Reports of Joint Select Committees. For example: H.C. 2201: Twenty-first report from the Joint Select Committee on Statutory Rules, Orders and Regulations.

Certain annual serials. For example: H.C. 1978: Report of the sea and inland fisheries of Northern Ireland 1968. [1970.]

Command Papers
This series survived the dissolution of Stormont and includes:

Various annual reports. For example: Cmd. 523: Northern Ireland Agriculture: 27th General Report of the Ministry of Agriculture. [1968.]

Reports of inquiries. For example: Cmd. 543: Law Reform in Northern Ireland. [1970.]

2. Non-Parliamentary publications

Statutory Rules and Orders
These are issued as printed and in an annual consolidated volume.

Index
Index to the Statutory Rules and Orders of Northern Ireland in force on 31st December 1970. 12th ed. [1972.]

Departmental papers
Prior to the imposition of direct rule some 90 titles were issued annually. They may be classified as follows:

Statistical. For example: Ministry of Development: *Local Authority Rate Statistics.*
Information. For example: Ministry of Agriculture: *Outdoors in Ulster's Forests.*
Administrative. For example: Ministry of Health and Social Services: *Medical Record Cards.*
Periodicals and Serials. For example: Ministry of Agriculture: *Agriculture in Northern Ireland.*

Catalogue
Arthur Maltby's *The Government of Northern Ireland 1922–72: a catalogue and breviate of Parliamentary Papers* was published by Irish University Press in 1974. The documents are catalogued and summarized in subject groups with indexes by titles and names. Most of the papers described are in the House of Commons and Command series but some departmental reports are included.

Microfilm edition
Trans-Media Publishing Company has announced an edition of the complete set of the main parliamentary publications on 35 mm. microfilm. A hard-copy subject catalogue accompanies the series, the first reels of which will be available in 1974. The microfilm is priced at approximately £1,000. It will also be possible to purchase separate parts or individual reels.
The edition comprises:

House of Commons Papers
Senate Papers
Command Papers
House of Commons Journals
Senate Journals
House of Commons Debates
Senate Debates

Effects of Direct Rule and Assembly

The future shape of Northern Ireland official publications is not yet clear. The following is a summary of the present position:

Acts

During the period of direct rule in Northern Ireland, legislation which would formerly have appeared as Acts of the Northern Ireland Parliament was issued as Orders in Council and published as British Statutory Instruments.

The Orders in Council are included in the annual volumes of Northern Ireland Statutes.

Laws enacted by the Assembly will be referred to as Measures of the Assembly.

Bills

Northern Ireland Bills were replaced by draft Orders in Council issued as draft Statutory Instruments. Assembly 'Bills' will consist of proposed Measures.

Debates

The first daily parts of the *Official Report of the Northern Ireland Assembly* have been published.

House of Commons Papers

Most of the items formerly issued in the House of Commons Papers series are now issued as Departmental Papers although some have appeared as British House of Commons Papers. Some Northern Ireland Assembly Papers have appeared.

Command Papers

This series continued after direct rule, the papers being presented to Parliament by the Secretary of State.

Statutory Rules and Orders

No practical change.

Department Papers

The volume of Departmental Papers has grown with an influx of documents from the House of Commons Series.

Indexes

Bibliographical Details

Reference numbers, title and price are printed in catalogues. No other bibliographical details are given.

Monthly List

A document of about ten pages, the *Monthly List* gives fullest details of methods of purchase. It also lists publications of Northern Ireland interest issued by HMSO London.

Annual List
The *Annual List* is a cumulation of *Monthly Lists*. There is no index.

Consolidated Indexed Lists

1921–1937
1938–47

Other Sources
British National Bibliography; Irish Publishing Record.

Collections of Northern Ireland Papers
The collections in the National Library of Ireland, Trinity College, Dublin, and Queen's University of Belfast are reasonably complete. The best collections in Britain are in the British Library and other libraries enjoying copyright privileges.

Acquisition: Purchase
Publications may be purchased from The Government Bookshop, 80 Chichester Street, Belfast BT1 4JY. Certain categories of papers are obtainable by subscription (including the *Monthly List of Publications*).

Purchase of other publications is facilitated by the Government Bookshop's deposit account system whereby money may be deposited in advance to avoid the need for frequent cash transactions. Customers maintaining accounts may place standing orders for documents on specified subjects.

INFORMATICS 1

Proceedings of a conference held by the Aslib Co-ordinate Indexing Group on 11-13 April 1973 at Durham University

£6.75; £5.00 to Aslib members
SBN 85142 058 3

Aslib Publications

6 JAN 1975

BRIEF REVIEWS

BATH UNIVERSITY LIBRARY, Design of Information Systems in the Social Sciences (DISISS): Working Paper no. 7; Size and Growth of Monograph Literature, with particular reference to the social sciences. Bath, Bath University, 1974. 78 pp. £2.00. (ISBN 0 900843 403)

In an attempt to alleviate the lack of efficient and effective information systems in the social sciences, the investigators on the DISISS project at Bath University have, since 1971, been engaged on a comprehensive study of the problems involved in the design of such systems for the social sciences. The work has included bibliometric studies of the literature (concerned, for instance, with its size and growth and with patterns of citation), the testing and evaluation of information services and the development of systems models.

This volume, which is the latest of the project's working papers, was prepared by Mr S. A. Roberts, a member of the DISISS team, and it describes in detail one of the bibliometric studies. It is hoped that the data collected here will help to plan bibliographical control of the monograph literature by providing information on both its present size (in terms of titles) and also on its rates of growth, in general terms and also in terms of specific countries and disciplines. The report also considers the reasons for these trends as well as their consequences.

The paper contains a description of the methods of data collection and the sources used, as well as having a detailed discussion of the findings. In addition to the text, there are also one hundred and thirty-seven tables and graphs.

PICKETT, KATHLEEN G. Sources of Official Data. Longman, 1974. 150 pp. £1.00 (paper). (ISBN 0 582 48767 6 (hard); 0 582 48768 2 (paper))

It is common nowadays for information specialists to find themselves in a situation where they are required either to provide an answer to a specific question using some form of statistical data or else to use such data themselves, for instance in carrying out a survey. A person in such a situation will find a number of books which list the sources of official statistics, but very few indeed that explain why they are often of little, or no, value and how the statistics can be interpreted.

This book is another which fails to do either. It contains chapters on population and other census data, labour and education statistics and also a brief section describing various possible sampling frames. It also has an appendix which relates local authority areas to the various standard regions but partly, no doubt, due to the long delay in publication, this information has become out-of-date with the 1974–75 re-organizations. It is arranged by subject (which in this context is largely irrelevant). What is needed is a problem-orientated approach, because researchers want to know which sources will help them and why. A listing of this nature neither answers this sort of question nor raises new ones.

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First subscription £7 50 per annum April to March Subsequent subscriptions £6 50

Greater London Intelligence Quarterly
A journal containing articles, with comment and statistical information, and reviews on a wide range of topics relating to the urban scene with special emphasis on London and the surrounding region
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Annual Abstract of Greater London Statistics
The most comprehensive source reference book of data on Greater London A must for all market researchers and sociologists
Vol 7 £6 00 Microfiche copies of previous issues are available
Prices on request

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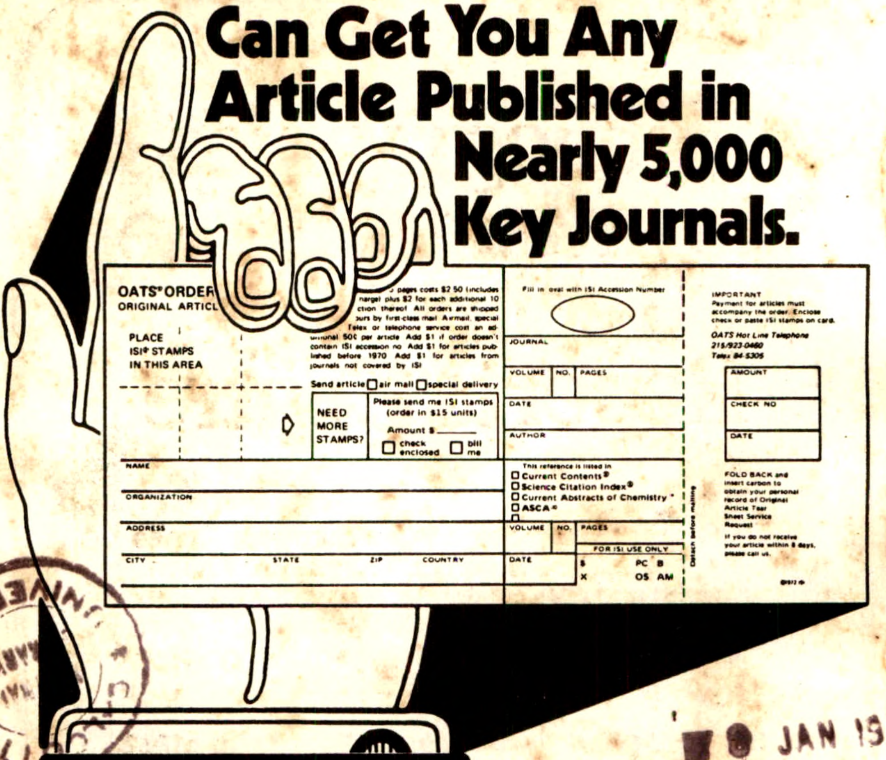

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Aslib Proceedings

A survey of the opinions of British Library, Lending Division users in special libraries on the effects of non-immediate access to journals
B. Houghton and C. Prosser **354**

Review literature: characteristics, sources and output in 1972
A. M. Woodward **367**

Technical Note

A coordinate card index with a capacity of 200,000 documents
Timothy Crosby **377**

UNIVERSITY

SEPTEMBER 1974
OL. 26, NO. 9

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	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
Production/ Maintenance					11	92	1	8	12	4·2
Sales/ Management			1	13	7	87			8	2.8
Design etc.	7	22	5	16	19	61.5			31	10.7
Publication					16	100			16	5.5
Background Research	7	3	9	4	190	91	3	2	209	72.3
Safety					3				3	1
General Information					7		1		8	2.8
No Reply					1		1		2	.7
TOTAL	14		15		254		6		289	100

* Percentages are approximations of the horizontal totals with the exception of the Total column.

TABLE 6: *Aspect of work correlated against inconvenience*

low occurrence of notification from a colleague as the source of request, as in other surveys of the source of requested articles verbal indication from a colleague features strongly and the use of abstract journals is not usually as significant as indicated here. However it must be remembered that in the present survey only access to documents not available in the users' library is being considered and the documents which had been seen by a colleague were probably held in the company library.

Source of request/Inconvenience to user

Journal reference was the largest single source of request, but the number of respondents who were inconvenienced is proportionate to the number of replies in each category.

Users' comments

Of the 30 per cent of respondents who commented on inter-library borrowing, half of the comments were received from the same library (which incidentally had a proportionately high response rate of 65 per cent). Most of the comments were favourable and expressed satisfaction with the service. Criticisms which were made stemmed mostly from the source of request rather than the service itself: for instance one or two people said 'No indication of foreign language' or 'Abstract inadequate'. These references usually resulted in an article found to be of low value on receipt. One recipient who had waited nearly 6 months for an article commented 'One has to act, operate, or make decisions on the basis that the reference does not exist'. Several respondents said that the service was adequate for most of their needs but felt that when an article was required urgently there appeared to be no special facility for dealing with the problem.

SOURCE OF REQUEST	*Considerable value*		*Moderate value*		*Low value*		*No value*		*No reply*		*Total*	
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
Abstract	15	30.6	30	18.9	16	24.6	5	41.7	2	50	68	23.5
General Bulletin	1	2.1			3	4.5					4	1.4
Library Bulletin	5	10.2	9	5.7	11	17	2	16.7			27	9.3
Library Search	2	4	9	5.7	4	6.1	2	16.7			17	5.9
Journal Reference	18	36.7	54	33.7	13	20	1	8.3	1	25	87	30.1
Book Reference	1	2	36	22.6	7	10.8	1	8.3			45	15.5
Personal Index			3	1.9							3	1
Colleague	4	8.1	8	5	4	6.2					16	5.5
External Source	1	2.1	3	1.9	2	3					6	2.1
Don't Remember			2	1.2	1	1.5					3	1
No Reply	2	4	5	3.1	4	6.2	1	8.3	1	25	13	4.5
TOTAL	49	100	159	100	65	100	12	100	4	100	289	100

TABLE 7: *Source of request correlated against value of article*

SOURCE	*Has this aspect of your work been held up in any way?*				
	Yes	*Partly*	*No*	*No reply*	*Totals*
Abstract journal	3	1	62	2	68
General Information Bulletin			4		4
Library Bulletin		1	25	1	27
Library Searching			17		17
Journal reference	5	8	73	1	87
Book reference	6	2	36	1	45
Personal index			3		3
Colleague		2	14		16
External source			6		6
Don't remember			3		3
No reply		1	11	1	13
TOTALS	14	15	254	6	289

TABLE 8: *Source of request correlated against inconvenience*

On the relative benefits of receiving photocopies or the original article one person preferred photocopies, but remarked on the serendipity factor as adjoining articles in a journal sometimes proved of interest!

Comments could be summarized by a provocative remark made by one chemist: 'The service is useful for journals of occasional interest (such as the above) but no substitute for a well-stocked library with all major journals to hand on the premises.'

Conclusions

A limitation to the assessment of an overall consensus in this survey is that only users whose requests were satisfied were monitored. This factor is in some measure compensated for in that most respondents will have had requests unsatisfied at some time in the past and the provision of question 8 enabled users to express their opinions in a broader context. Despite this limitation it is felt that there is justification for arriving at the following conclusions.

The majority of users within the participating libraries found the BLLD service satisfactory despite the dramatic variability of waiting periods. This variability is partly attributable to the different loan systems operating in the seven libraries: while some libraries expedite requests to the BLLD on the day of receipt others batch requests once or twice a week.

At present levels of borrowing from BLLD the service was generally considered satisfactory, but if librarians were to rely on BLLD to a greater extent it would be imperative that provision be made for a priority loan service. When an urgent request is received at present in a special library and a telex request is sent to the BLLD there is no guarantee that the request will be treated with any greater urgency than a postal requisition, the only time saved is the period taken for the request to arrive at the BLLD.

It would appear that delay is not a critical factor as viewed by librarians: only

10 per cent of the respondents reported any inconvenience. Furthermore 80 per cent of respondents who found the article to be valuable on receipt indicated that the delay had not caused inconvenience.

There appears to be no significant variation by discipline in the evaluation of articles on receipt.

No direct correlation between the subject discipline of respondents and the degree of inconvenience caused is indicated. The aspect of work for which the article is required proved to be more indicative of relative importance than the discipline in which the user operated.

The major sources of reference to material not held in the library and therefore obtained from the BLLD are journal references (30 per cent) and abstract journals (23.5 per cent). Thus other sources generate only 46 per cent of items acquired externally.

APPENDIX I

Survey of National Lending Library user opinions

To the originator of this request
The library is co-operating in an independent research survey sponsored by the Office for Scientific and Technical Information of the Department of Education and Science into the use made of journals in industrial libraries, and the use of the National Lending Library. We are interested in your opinions on the delay period from making a request for a journal to receiving the item (on loan or photocopied) and how the delay affects your work.

It would be greatly appreciated if you could assist us by completing the questionnaire and *returning it to the library.*

If you receive more than one questionnaire during the period surveyed please fill in each one.

Questionnaire

1. In which subject field are you working?
2. How long have you been waiting for this item?
3. Has your work been held up in any way whilst you have been awaiting its arrival?
4. What significance would you attach to this item now that you have seen it? Please tick the appropriate box
   - a. Considerable importance ☐
   - b. Of moderate value ☐
   - c. Low value ☐
   - d. No value ☐
5. What aspect of your work was this item required for
   - a. Solving a specific problem in: production, maintenance ☐
     - sales or management ☐
     - design, testing, analysis or inspection ☐
   - b. Research for: publication of a paper ☐
     - background to a current research project ☐
   - c. Other aspects please specify
6. How did you learn of this article?
7. Any comments you would like to make on inter-library borrowing (please use reverse of sheet).

APPENDIX 2

Survey of British Library, Lending Division user opinions

To the originator of this request
The library is co-operating in an independent research survey sponsored by the Office for Scientific and Technical Information of the Department of Education and Science into the use made of journals in industrial libraries and the use of the British Library, Lending Division (formerly known as the National Lending Library). We are interested in the delay period from making a request for a journal to receiving the item (on loan or photocopied) and how the delay affects your work.

It would be greatly appreciated if you could assist us by completing the questionnaire and ***returning it to the library.***

If you receive more than one questionnaire during the survey please fill in each one.

Questionnaire

1. Title of the requested journal
2. In which subject field are you working?
3. How long have you been waiting for this item?
4. Has this aspect of your work been held up in any way whilst you have been awaiting its arrival?
5. What significance would you attach to this item now that you have seen it? Please tick the appropriate box
    a. Considerable importance ☐
    b. Of moderate value ☐
    c. Low value ☐
    d. No value ☐
6. What aspect of your work was this item required for?

a. Solving a specific problem in:	production, maintenance	☐
	sales or management	☐
	design, testing, analysis	☐
b. Research for:	publication of a paper	☐
	background to a current project	☐

    c. Other aspects please specify
7. How did you learn of this article?
8. Any comments you would like to make on inter-library borrowing (please use reverse of sheet if required).

Review literature: characteristics, sources and output in 1972

A. M. Woodward

Aslib Research and Development Department

Within the context of providing an indexing service to the review literature in science and technology, reviews are defined and six types of review literature described. The sources of review literature are examined and an attempt made to estimate the current annual output of reviews in specialist review serials, primary journals, conference proceedings, books, reports and secondary services. The total output of 'good' quality reviews from these sources in 1972 is estimated to be 22,000. The characteristics of review literature are examined for the purposes of automatic identification; a method of identifying reviews by using the number of references was found to be between 75 and 85 per cent effective at the 40 references level.

Introduction

REVIEW LITERATURE IN science and technology is widely regarded as a useful means of keeping abreast of the current literature, retrieving important literature and evaluating and synthesizing the development of knowledge. It is a form of literature which is expensive to produce and in recent years the need for greater production of reviews has often been stressed. In view of the high value of review literature in terms of both input and output, it is surprising that this form of literature as a class has so far not received as much attention as other forms of the literature nor been brought under specific bibliographic control.

Very little research has been carried out on review literature to date. Papier[1] found about thirty references only in an exhaustive literature survey in 1971. Four studies, [1,2,3,4] have investigated the use made of review literature by readers. These results confirm that *Annual Review* series do serve a bibliographical function and that they also provide a textbook (tutorial) function. Indeed there is a tacit acceptance of the usefulness of the review literature both for reference location and searching and for the understanding of new subjects,[5,6,7] although little concrete evidence on either point has been produced as yet.

As far as can be determined no attempts have been made to estimate the total output of review literature, and there have been surprisingly few studies to investigate the review literature in depth within specific disciplines, the exceptions being physics,[5,6,8] chemistry,[7,9] and a broad study of eight areas of science.[10]

What is review literature?

Several attempts have been made to classify review literature, the most useful being those of Papier,[1] Adams,[11] Virgo,[12] and Blyumenau.[13] By bringing together their ideas and ignoring some of the finer distinctions in definition, a classification of review-type literature was made for use in this study (Table 1). Types A, B, C, and F will be readily recognizable: D is exemplified by a well-

TYPE	CHARACTERISTICS	LITERATURE COVERAGE
A	Critical	+
	Evaluative	+
	Interpretive	+
	Speculative	+
B	State of the Art	+
C	Historical	+
	Biographical	±
D	Tutorial	±
E	Technical	±
	Application	±
F	Popular	—
	Topical	±
G	Article and book reviews	—
	Comments	—

+ = good, ± = variable, — = poor

TABLE 1: *Types of review literature*

referenced textbook chapter; E is common among engineering and medical publications, the latter being better referenced; G is 'the other kind of review'.

When people refer to the review literature, the type of literature that is generally envisaged corresponds to A and B (and possibly F). However, if one looks at the functions of all the types of literature involved, one feature in common is conveying to the reader information which to varying extents has been evaluated, assessed and related to the general body of knowledge by a third person. Because of this, these publications are probably more effective in the transfer of ideas and knowledge than research papers. Research papers become archival records of facts, figures and minutiae but real knowledge in the form of theories, ideas and understanding is transmitted by the above literature, informal contacts and, of course, teaching.

In this study reviews are regarded as essentially bibliographic devices: that is as authoritative keys to the literature in a particular subject. Consequently, items with a large number of references are more likely to fill this role. This does not mean that reviews with low numbers of references cannot do this if written as literature reviews, as often happens in the development of a new research front. Specifically excluded are: encyclopaedia; compendia; handbooks; data compilations; application reviews; product data and product reviews. This approach, while not specifically catering for the tutorial use of reviews, will in fact provide much in this area, particularly in research fields, because of the essentially dual nature of reviews (especially types A and D).

Returning to the classification in Table 1, types A and B will certainly be included in any definition of review; to this is added C and selected items from D (those with, for example, more than 30–40 references). Category E is very large in both concept and potential numbers and can probably be subdivided

ASPECT OF WORK	*Has this aspect of your work been held up in any way?* Yes *		Partly		No		No Reply		Total	
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
Production/ Maintenance					11	92	1	8	12	4·2
Sales/ Management			1	13	7	87			8	2.8
Design etc.	7	22	5	16	19	61.5			31	10.7
Publication					16	100			16	5.5
Background Research	7	3	9	4	190	91	3	2	209	72.3
Safety					3				3	1
General Information					7		1		8	2.8
No Reply					1		1		2	.7
TOTAL	14		15		254		6		289	100

* Percentages are approximations of the horizontal totals with the exception of the Total column.

TABLE 6: *Aspect of work correlated against inconvenience*

low occurrence of notification from a colleague as the source of request, as in other surveys of the source of requested articles verbal indication from a colleague features strongly and the use of abstract journals is not usually as significant as indicated here. However it must be remembered that in the present survey only access to documents not available in the users' library is being considered and the documents which had been seen by a colleague were probably held in the company library.

Source of request/Inconvenience to user

Journal reference was the largest single source of request, but the number of respondents who were inconvenienced is proportionate to the number of replies in each category.

Users' comments

Of the 30 per cent of respondents who commented on inter-library borrowing, half of the comments were received from the same library (which incidentally had a proportionately high response rate of 65 per cent). Most of the comments were favourable and expressed satisfaction with the service. Criticisms which were made stemmed mostly from the source of request rather than the service itself: for instance one or two people said 'No indication of foreign language' or 'Abstract inadequate'. These references usually resulted in an article found to be of low value on receipt. One recipient who had waited nearly 6 months for an article commented 'One has to act, operate, or make decisions on the basis that the reference does not exist'. Several respondents said that the service was adequate for most of their needs but felt that when an article was required urgently there appeared to be no special facility for dealing with the problem.

SOURCE OF REQUEST	*Considerable value*		*Moderate value*		*Low value*		*No value*		*No reply*		*Total*	
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
Abstract	15	30.6	30	18.9	16	24.6	5	41.7	2	50	68	23.5
General Bulletin	1	2.1			3	4.5					4	1.4
Library Bulletin	5	10.2	9	5.7	11	17	2	16.7			27	9.3
Library Search	2	4	9	5.7	4	6.1	2	16.7			17	5.9
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Book Reference	1	2	36	22.6	7	10.8	1	8.3			45	15.5
Personal Index			3	1.9							3	1
Colleague	4	8.1	8	5	4	6.2					16	5.5
External Source	1	2.1	3	1.9	2	3					6	2.1
Don't Remember			2	1.2	1	1.5					3	1
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Book reference	6	2	36	1	45
Personal index			3		3
Colleague		2	14		16
External source			6		6
Don't remember			3		3
No reply		1	11	1	13
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On the relative benefits of receiving photocopies or the original article one person preferred photocopies, but remarked on the serendipity factor as adjoining articles in a journal sometimes proved of interest!

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Conclusions

A limitation to the assessment of an overall consensus in this survey is that only users whose requests were satisfied were monitored. This factor is in some measure compensated for in that most respondents will have had requests unsatisfied at some time in the past and the provision of question 8 enabled users to express their opinions in a broader context. Despite this limitation it is felt that there is justification for arriving at the following conclusions.

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If you receive more than one questionnaire during the period surveyed please fill in each one.

Questionnaire

1. In which subject field are you working?
2. How long have you been waiting for this item?
3. Has your work been held up in any way whilst you have been awaiting its arrival?
4. What significance would you attach to this item now that you have seen it? Please tick the appropriate box
   a. Considerable importance ☐
   b. Of moderate value ☐
   c. Low value ☐
   d. No value ☐
5. What aspect of your work was this item required for
   a. Solving a specific problem in: production, maintenance ☐
      sales or management ☐
      design, testing, analysis or inspection ☐
   b. Research for: publication of a paper ☐
      background to a current research project ☐
   c. Other aspects please specify
6. How did you learn of this article?
7. Any comments you would like to make on inter-library borrowing (please use reverse of sheet).

APPENDIX 2

Survey of British Library, Lending Division user opinions

To the originator of this request

The library is co-operating in an independent research survey sponsored by the Office for Scientific and Technical Information of the Department of Education and Science into the use made of journals in industrial libraries and the use of the British Library, Lending Division (formerly known as the National Lending Library). We are interested in the delay period from making a request for a journal to receiving the item (on loan or photocopied) and how the delay affects your work.

It would be greatly appreciated if you could assist us by completing the questionnaire and ***returning it to the library.***

If you receive more than one questionnaire during the survey please fill in each one.

Questionnaire

1. Title of the requested journal
2. In which subject field are you working?
3. How long have you been waiting for this item?
4. Has this aspect of your work been held up in any way whilst you have been awaiting its arrival?
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6. What aspect of your work was this item required for?
   a. Solving a specific problem in: production, maintenance ☐
   sales or management ☐
   design, testing, analysis ☐
   b. Research for: publication of a paper ☐
   background to a current project ☐
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Review literature: characteristics, sources and output in 1972

A. M. Woodward

Aslib Research and Development Department

Within the context of providing an indexing service to the review literature in science and technology, reviews are defined and six types of review literature described. The sources of review literature are examined and an attempt made to estimate the current annual output of reviews in specialist review serials, primary journals, conference proceedings, books, reports and secondary services. The total output of 'good' quality reviews from these sources in 1972 is estimated to be 22,000. The characteristics of review literature are examined for the purposes of automatic identification; a method of identifying reviews by using the number of references was found to be between 75 and 85 per cent effective at the 40 references level.

Introduction

REVIEW LITERATURE IN science and technology is widely regarded as a useful means of keeping abreast of the current literature, retrieving important literature and evaluating and synthesizing the development of knowledge. It is a form of literature which is expensive to produce and in recent years the need for greater production of reviews has often been stressed. In view of the high value of review literature in terms of both input and output, it is surprising that this form of literature as a class has so far not received as much attention as other forms of the literature nor been brought under specific bibliographic control.

Very little research has been carried out on review literature to date. Papier[1] found about thirty references only in an exhaustive literature survey in 1971. Four studies, [1,2,3,4] have investigated the use made of review literature by readers. These results confirm that *Annual Review* series do serve a bibliographical function and that they also provide a textbook (tutorial) function. Indeed there is a tacit acceptance of the usefulness of the review literature both for reference location and searching and for the understanding of new subjects,[5,6,7] although little concrete evidence on either point has been produced as yet.

As far as can be determined no attempts have been made to estimate the total output of review literature, and there have been surprisingly few studies to investigate the review literature in depth within specific disciplines, the exceptions being physics,[5,6,8] chemistry,[7,9] and a broad study of eight areas of science.[10]

What is review literature?

Several attempts have been made to classify review literature, the most useful being those of Papier,[1] Adams,[11] Virgo,[12] and Blyumenau.[13] By bringing together their ideas and ignoring some of the finer distinctions in definition, a classification of review-type literature was made for use in this study (Table 1). Types A, B, C, and F will be readily recognizable: D is exemplified by a well-

TYPE	CHARACTERISTICS	LITERATURE COVERAGE
A	Critical	+
	Evaluative	+
	Interpretive	+
	Speculative	+
B	State of the Art	+
C	Historical	+
	Biographical	±
D	Tutorial	±
E	Technical	±
	Application	±
F	Popular	—
	Topical	±
G	Article and book reviews	—
	Comments	—

+ = good, ± = variable, — = poor

TABLE 1: *Types of review literature*

referenced textbook chapter; E is common among engineering and medical publications, the latter being better referenced; G is 'the other kind of review'.

When people refer to the review literature, the type of literature that is generally envisaged corresponds to A and B (and possibly F). However, if one looks at the functions of all the types of literature involved, one feature in common is conveying to the reader information which to varying extents has been evaluated, assessed and related to the general body of knowledge by a third person. Because of this, these publications are probably more effective in the transfer of ideas and knowledge than research papers. Research papers become archival records of facts, figures and minutiae but real knowledge in the form of theories, ideas and understanding is transmitted by the above literature, informal contacts and, of course, teaching.

In this study reviews are regarded as essentially bibliographic devices: that is as authoritative keys to the literature in a particular subject. Consequently, items with a large number of references are more likely to fill this role. This does not mean that reviews with low numbers of references cannot do this if written as literature reviews, as often happens in the development of a new research front. Specifically excluded are: encyclopaedia; compendia; handbooks; data compilations; application reviews; product data and product reviews. This approach, while not specifically catering for the tutorial use of reviews, will in fact provide much in this area, particularly in research fields, because of the essentially dual nature of reviews (especially types A and D).

Returning to the classification in Table 1, types A and B will certainly be included in any definition of review; to this is added C and selected items from D (those with, for example, more than 30–40 references). Category E is very large in both concept and potential numbers and can probably be subdivided with advantage. Reviews in categories E and F are important formal links in the transfer of information to practitioners. On the whole category G does not concern us.

For the purposes of this study therefore, reviews are defined as all items falling in categories A, B and C, those items in categories D and E which more closely resemble A and B, and selected items from F.

Characteristics of review literature

The attempt here was to provide a set of easily determined objective criteria upon which to make a decision as to whether any particular item is a review or not. These criteria are obviously the features which most often occur in type A, B and C material. So far six such characteristics have been found which, in order of importance, state that reviews:

1. report no original research
2. appear in publications devoted to publishing reviews or in review sections of periodicals
3. have a title stating that the item is a review
4. contain one or more of the following in the title or abstract: review, progress, survey, overview, advances
5. contain large numbers of references
6. are indexed or flagged as a review by a secondary service.

Of these criteria, only 1 may be considered mandatory, and conversely any item conforming to 2 or 3 will be a review. Presence of features 4 and 5 will reinforce the concept of a review; feature 6 only has relevance when searching for reviews from a database.

One further feature which may be of use in identifying reviews is the 'compression ratio': that is, the average number of references cited per page of text.[8,14] However, there is as yet no indication whether this would serve to distinguish review papers from other items and it is in any case difficult to apply on a large scale.

These characteristics are not very satisfactory because the essential distinction is functional and not by type or format. In this study therefore, except where otherwise stated, reviews were identified by personal examination of the individual item concerned.

Sources of review literature

The literature was broken down into six types according to the method of publication, each of which was surveyed separately. The six types of literature were: review serials; primary journals; conference proceedings (excluding those published in primary journals); books (excluding conference proceedings and review serials); reports; secondary services.

Review serials

These are publications which are devoted to publishing reviews, mainly of types A and B, in a particular field. They form a numbered series and are published at intervals of usually less than three years. They fall into eight main types:

(a) 'Annual Review' type; containing state-of-art reviews and usually published annually in book format. Example: *Annual Review of Biochemistry.*

(b) 'Advances' type; containing both critical and state-of-art reviews and published somewhat less regularly in book format. Examples: *Advances in Chemical Physics, Progress in Industrial Microbiology.*

(c) 'Journal' type; generally containing critical reviews and often published by a learned society as a quarterly or monthly journal. Example: *Chemical Reviews.*

(d) 'Popular' journals; generally broad in scope, providing popular articles in topical areas. Example: *Scientific American.*

(e) 'Yearbook' type; generally in the medical field, a form of state-of-art reviews but dealing with individual papers. Of dubious value as reviews but occasionally containing authored reviews of a topic. Example: *Yearbook of Radiology.*

(f) 'Monograph' series; usually an irregular series of long treatises in a particular field, often forming a definitive work or milestone in the development of a subject. Example: *Fortschritte der physikalischen Chemie.*

(g) 'Essay' type; generally providing tutorial-type reviews aimed at a broader audience than the subject specialist, particularly teachers and lecturers. Example: *Essays in Toxicology.*

(h) 'Comments' type; usually containing brief reviews of a subject, taking one or a small number of recent papers as the nucleus. Example: *Comments on Atomic and Molecular Physics.*

These form the most easily identifiable source of reviews and can be regarded as the 'core' of the review literature. Although numerically output is much less than in primary journals, the quality of reviews appearing in this format is among the best, virtually all falling into categories A and B.

Review serial titles were located from the following sources: lists compiled by Unesco,[15] Sheffield Polytechnic,[16] Sussex University and Fix *et al*;[10] catalogues of the major publishers; the holdings of the British Library; profiles on the Library of Congress and British MARC tapes for 1972. Approximately five hundred of these publications which are known to have appeared since 1970 have been located; full details are given in *Directory of Review Serials* to be published soon by Aslib.[17] Three hundred and nine such serials are known to have been published in 1972 in science and technology. A count of all review items in these publications showed that 3,675 were published in 1972. It is not possible to determine what proportion of the total have in fact been identified and examined, but it is probably fairly high. Assuming that 80 per cent have in fact been found, the output in this format is estimated to be 4,500 in 1972.

Primary journals

A large number of review articles are published in the primary journal literature, being either invited by the editorial board or submitted by the author. The frequency of occurrence of reviews in the total literature has been variously estimated as between 0.7 per cent and 6 per cent of published papers,[6,9,12] with a tendency for the higher incidences to be in applied fields.[9,12] Because primary journal papers form the bulk of the published literature these figures reflect the incidence in this type of literature. The present study indicates that the incidence of good quality reviews in the primary journal literature is approximately 1.1 per cent.

Despite this low incidence, the very large output of primary journal literature means that more reviews are published in this medium than in any other. Inevitably the quality varies enormously, but in general it would seem that the better quality reviews (in the sense of scientific content rather than style or type) will appear in the better quality journals.

Within the context of the study it has been impossible to make a representative sample of all primary literature. Accordingly, a sample was taken from the ISI *Source Index* to the *Science Citation Index*; this probably represents the 'core' of the world's scientific literature. All items with more than forty references were taken from a 1 in 5 sample of the Source Index for April—June 1972 and the original article examined to see whether the item was a review. In addition, all items flagged as a review by ISI in the sample were also examined. Altogether 225 reviews were identified (193 with more than forty references) in the sample of 644 items (604 with more than forty references). This is an overall frequency of 1.24 per cent of all items (estimated 91,000 items in this quarter). However, of these, 38 appeared in review serials and must therefore be excluded; this means that 187 actually appeared in primary journal literature in the sample. The total number of review serial items will be negligible compared with the total listing, so that the incidence in the primary literature is 1.03 per cent. Extrapolating this to the complete ISI *Source Index* in 1972 indicates that 4,000 reviews in the primary journal literature were listed by ISI in 1972. Of the 187 primary journal items 156 contained more than forty references, a frequency of 83 per cent, which would indicate that 3,300 reviews with more than forty references were listed by ISI in 1972.

If it is assumed that the output of primary journal literature in 1972 was one million then the output of reviews with more than forty references would be about 8,500. Data elsewhere indicates that 15–25 per cent of reviews contain less than forty references, so that the incidence and output of all reviews in primary journals are computed to be 1.02—1.13 per cent and 10,200—11,300 respectively, of which about 4,000 would be listed by ISI.

Conference proceedings

Insofar as each conference may be regarded as a state-of-art review of the development of its particular subject, there are grounds for regarding each conference as a single review. This may be valid for conferences in an applied field with many short papers outlining various applications of a particular technology, but for most conferences the majority of papers are reporting on research. Very often reviews are solicited by the organizers as an introduction to each session and occasionally presented papers are good reviews. It has been one aim of this study to identify these individual reviews. Conference proceedings are published in three ways: abstracts only; full papers forming part of or supplements to primary journals; full papers in a separate publication. Abstracts are obviously of no use as reviews and proceedings published in journals will have been covered above. Of those published separately many are styled like the 'Advances in' review serials, but as they contain research reports they must be treated as other conference proceedings.

A small sample of 109 conferences, taken from the 1972 *Index to Conferences Received by the* NLL, showed that 43 (39.5 per cent) were represented by abstracts only, outside the scope of the study or too old (1965 or earlier). Of the remaining 66, 53 were located, of which 39 (73.5 per cent) were published separately and 14 (26.5 per cent) in primary journals. Therefore approximately 45 per cent of published conferences may contain reviews not accounted for elsewhere. In the conferences published separately there was an average of 35 papers per conference, of which approximately 2 per cent (28 reviews in 1,363 papers) were classed as good reviews. Additionally, 15 conference publications similar to review serials were examined. These had an average of 51 papers, of which approximately 6 per cent were considered to be reviews (45 reviews out of 762 papers).

In 1972 NLL listed 7,049 conference proceedings in its index of conferences received, which is probably the most comprehensive listing available. Extrapolating these figures indicates an annual output of 2,220 and 9,516 reviews respectively. The lower figure, coming from the larger sample, is probably more correct and a figure of 4,000 per year is probably somewhere near the truth.

Books

Books form a very nebulous category of publications. Excluded from this category are review serials, conference proceedings, reports (all dealt with elsewhere), popular books and elementary and undergraduate textbooks. This in effect leaves postgraduate and advanced level textbooks and treatises. In a similar manner to conference proceedings these may be regarded as reviews both at the total book level and at individual chapter level. The best approach here is probably to adopt that of some secondary services, which is to treat books on one subject written by one author or team as a single review, and to treat books written by various authors under an editor at the individual chapter level. For the sake of simplicity only books in the English language are considered. Herring,[4,9] found that a large proportion of reviews in physics were in 'treatises' (much more than 50 per cent) but it is not clear exactly how this relates to the above definition.

In a search on British MARC for 1972 using PRECIS terms for reviews, 27 books indexed as containing reviews were found. These almost certainly would contain reviews of types A and B but it is suggested that the large majority of chapters in advanced level books also serve a review function and obviously there are a great many more of these.

In order to form a very rough estimation, one week's listing of BNB MARC tapes from January 1973 in Dewey Decimal categories 500 and 600 was evaluated by title and other details as to whether the listed items conformed to the definitions for reviews given here. Of the 172 listed, 10 were adjudged 'books', 6 conference proceedings and 3 review serials; extrapolated to a full year these become 520, 312 and 156 respectively. If one third of the books are assumed to be multi-authored with ten contributors each, then the total number of reviews is computed to be 2,070. It is also assumed that as most of these types of books in the English language are published by international publishing houses, the majority will appear in BNB, but an allowance must be made for those that do not.

Reports

A small number of critical and state-of-art reviews are issued as reports; very often these form the first report in a series on a large project, or a literature survey in a particular area may have been commissioned as a project in itself. One issue each of *USGRA*, *STAR*, *NSA* and *R & D Abstracts* from spring 1972 was examined to identify the output of reviews in this medium; 14, 5, 4 and 15 reviews respectively were found (total 38). In order to eliminate overlap, all reports with NTIS accession numbers were eliminated from *STAR*, *NSA* and *R & D Abstracts* leaving 3, 4 and 11 respectively. Extrapolating to a full year indicates a total output of 450 reviews in reports in 1972.

Secondary services

A number of small secondary services (for example, *Nutrition Abstracts & Reviews*, *Automobile Abstracts*) include commissioned review articles as part of the service. These are usually good state-of-art reviews based as they are on the resources of the service concerned. However the total output of these is very small, probably less than 200 per year.

Overall publication of reviews in 1972

Using the figures obtained in the above paragraphs, the output of reviews of reasonable quality is estimated to be approximately 22,000 in 1972. This is made up as follows: review serials 4,500; primary journals 10,500; conference proceedings 4,000; books 2,500; reports 500. This appears to be rather less than 2 per cent of the world's total output of scientific and technical literature.

Identification of reviews

The study was commissioned in part to test the method of using the number of references in an item as a means of identification of reviews, especially in the primary journal literature. As the study progressed it became obvious that this could be useful as a filter but no more, and that already other indicators were consciously and subconsciously being used to identify review material.

Number of references as an indicator of review literature

As noted previously a sample of items with more than forty references was taken from the ISI *Source Index* for April–June 1972. This issue contained an estimated 91,000 items (exact figures are not available) out of the 387,805 listed by ISI in 1972. A total of 604 items (3.30 per cent of the sample) were found with forty or more references (including those flagged 'R') of which 193 (31.95 per cent) were judged to be reviews (plus 5 in social sciences). As might be expected, the proportion of reviews found increased as the number of references increased, so that virtually all items with more than one hundred references were reviews.

In order to test this method, samples of reviews were taken from (a) review serials and (b) items flagged 'R' by ISI in a 70 per cent sample of the *Source Index*, and were analysed with respect to the number of references (see Table 2). (Note that in the initial sample from ISI, not all items flagged 'R' with less than thirty references were in fact reviews and therefore the figures at this level were amended to the following proportions: 0–5 references 12 per cent; 6–10 references 40 per cent; 11–25 references 75 per cent; 26–30 references 90 per cent of the actual numbers found.)

NO. OF REFERENCES	SAMPLE			
	Review serials		*ISI 'R' items*	
	Numbers	cumulated per cent	Numbers	cumulated per cent
0–10	32	2.19	8	1.85
11–20	57	6.10	31	9.01
21–30	61	10.27	33	16.63
31–40	65	14.73	34	24.48
41–50	66	19.25	29	31.18
51–60	66	23.77	41	40.65
61–70	84	29.52	30	47.58
71–80	71	34.38	27	53.81
81–90	60	38.49	32	61.20
91–100	68	43.15	17	65.13
more than 100	830	100	154	100
TOTAL	1460	100	436	100

TABLE 2: *Distribution of references in two samples of reviews*

In both samples the distribution of references in reviews was fairly constant over the range 10–100 references, tailing off fairly slowly above 100 references in the case of reviews in review serials and rather more quickly for the ISI 'R' flagged reviews. Over the whole range, slight peaks in the distribution were discernible at about 60 references in the review serials sample and at about 45 references in the ISI 'R' items.

It would therefore appear that to rely solely on the number of references to identify reviews would miss 10–17 per cent of reviews if used at the thirty references level and 15–25 per cent if used at the forty references level. In the sample of items with more than forty references from ISI, only 35 per cent of items were judged to be reviews. A small survey of the same material indicated that by adopting a cut-off of thirty references, a total of 1,574 items (8.65 per cent of the sample) would need to have been examined (vs 604) in order to locate 238 reviews (vs 193), the extra 970 items yielding only a further 45 reviews. The overall frequency of reviews in the examined material would drop to 15 per cent.

Other indicators of review literature

When evaluating the sample of items from the ISI *Source Index* it became obvious that much of the literature could be correctly assigned as reviews or not using only the details given by ISI, and the following set of rules, using only the information contained in the ISI *Source Index* was drawn up to place items with more than forty references as reviews or otherwise.

Positive indicator (i.e. must be a review)
More than 100 references
Keyword in title (review, literature review/survey, overview, progress, recent)
Title otherwise states that it is a review
Published in a review serial

Partial indicator (i.e. likely to be a review)
40–100 references (the higher the number the greater the likelihood of being a review)
Indexed as a review (ISI 'R' flag)
Single authorship
Title indicates a review (generally merely the statement of the subject)

Negative indicator (i.e. not a review)
Title indicates experimental work (e.g. 'studies on' or part of a numbered series)
Appears in a journal which does not publish reviews (e.g. *Journal of the American Chemical Society*)

After some practice had been gained in identifying reviews by looking at the original articles, a sample of 108 unchecked items from the ISI sample were judged unseen and placed in four categories: definitely review; probably review; probably not review; definitely not review. After this they were judged by examining the complete article. Altogether there were 32 reviews of which 30 had been placed in either of the first two categories, and overall 87 per cent of the items had been classified correctly. However, in the 'probably review' category, only 68 per cent were correctly assessed whereas in the other categories the assessment was 92–100 per cent correct. This indicates that there are certain features in reviews which can be used to identify them without consulting the original. They would appear to have value in discarding material which is obviously not review but the positive identification of most reviews requires examination of the original article.

Acknowledgement

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with advantage. Reviews in categories E and F are important formal links in the transfer of information to practitioners. On the whole category G does not concern us.

For the purposes of this study therefore, reviews are defined as all items falling in categories A, B and C, those items in categories D and E which more closely resemble A and B, and selected items from F.

Characteristics of review literature

The attempt here was to provide a set of easily determined objective criteria upon which to make a decision as to whether any particular item is a review or not. These criteria are obviously the features which most often occur in type A, B and C material. So far six such characteristics have been found which, in order of importance, state that reviews:

1. report no original research
2. appear in publications devoted to publishing reviews or in review sections of periodicals
3. have a title stating that the item is a review
4. contain one or more of the following in the title or abstract: review, progress, survey, overview, advances
5. contain large numbers of references
6. are indexed or flagged as a review by a secondary service.

Of these criteria, only 1 may be considered mandatory, and conversely any item conforming to 2 or 3 will be a review. Presence of features 4 and 5 will reinforce the concept of a review; feature 6 only has relevance when searching for reviews from a database.

One further feature which may be of use in identifying reviews is the 'compression ratio': that is, the average number of references cited per page of text.[8,14] However, there is as yet no indication whether this would serve to distinguish review papers from other items and it is in any case difficult to apply on a large scale.

These characteristics are not very satisfactory because the essential distinction is functional and not by type or format. In this study therefore, except where otherwise stated, reviews were identified by personal examination of the individual item concerned.

Sources of review literature

The literature was broken down into six types according to the method of publication, each of which was surveyed separately. The six types of literature were: review serials; primary journals; conference proceedings (excluding those published in primary journals); books (excluding conference proceedings and review serials); reports; secondary services.

Review serials

These are publications which are devoted to publishing reviews, mainly of types A and B, in a particular field. They form a numbered series and are published at intervals of usually less than three years. They fall into eight main types:

(a) 'Annual Review' type; containing state-of-art reviews and usually published annually in book format. Example: *Annual Review of Biochemistry.*
(b) 'Advances' type; containing both critical and state-of-art reviews and published somewhat less regularly in book format. Examples: *Advances in Chemical Physics, Progress in Industrial Microbiology.*
(c) 'Journal' type; generally containing critical reviews and often published by a learned society as a quarterly or monthly journal. Example: *Chemical Reviews.*
(d) 'Popular' journals; generally broad in scope, providing popular articles in topical areas. Example: *Scientific American.*
(e) 'Yearbook' type; generally in the medical field, a form of state-of-art reviews but dealing with individual papers. Of dubious value as reviews but occasionally containing authored reviews of a topic. Example: *Yearbook of Radiology.*
(f) 'Monograph' series; usually an irregular series of long treatises in a particular field, often forming a definitive work or milestone in the development of a subject. Example: *Fortschritte der physikalischen Chemie.*
(g) 'Essay' type; generally providing tutorial-type reviews aimed at a broader audience than the subject specialist, particularly teachers and lecturers. Example: *Essays in Toxicology.*
(h) 'Comments' type; usually containing brief reviews of a subject, taking one or a small number of recent papers as the nucleus. Example: *Comments on Atomic and Molecular Physics.*

These form the most easily identifiable source of reviews and can be regarded as the 'core' of the review literature. Although numerically output is much less than in primary journals, the quality of reviews appearing in this format is among the best, virtually all falling into categories A and B.

Review serial titles were located from the following sources: lists compiled by Unesco,[15] Sheffield Polytechnic,[16] Sussex University and Fix *et al*;[10] catalogues of the major publishers; the holdings of the British Library; profiles on the Library of Congress and British MARC tapes for 1972. Approximately five hundred of these publications which are known to have appeared since 1970 have been located; full details are given in *Directory of Review Serials* to be published soon by Aslib.[17] Three hundred and nine such serials are known to have been published in 1972 in science and technology. A count of all review items in these publications showed that 3,675 were published in 1972. It is not possible to determine what proportion of the total have in fact been identified and examined, but it is probably fairly high. Assuming that 80 per cent have in fact been found, the output in this format is estimated to be 4,500 in 1972.

Primary journals

A large number of review articles are published in the primary journal literature, being either invited by the editorial board or submitted by the author. The frequency of occurrence of reviews in the total literature has been variously estimated as between 0.7 per cent and 6 per cent of published papers,[6,9,12] with a tendency for the higher incidences to be in applied fields.[9,12] Because primary journal papers form the bulk of the published literature these figures reflect the incidence in this type of literature. The present study indicates that the incidence of good quality reviews in the primary journal literature is approximately 1.1 per cent.

Despite this low incidence, the very large output of primary journal literature means that more reviews are published in this medium than in any other. Inevitably the quality varies enormously, but in general it would seem that the better quality reviews (in the sense of scientific content rather than style or type) will appear in the better quality journals.

Within the context of the study it has been impossible to make a representative sample of all primary literature. Accordingly, a sample was taken from the ISI *Source Index* to the *Science Citation Index*; this probably represents the 'core' of the world's scientific literature. All items with more than forty references were taken from a 1 in 5 sample of the Source Index for April—June 1972 and the original article examined to see whether the item was a review. In addition, all items flagged as a review by ISI in the sample were also examined. Altogether 225 reviews were identified (193 with more than forty references) in the sample of 644 items (604 with more than forty references). This is an overall frequency of 1.24 per cent of all items (estimated 91,000 items in this quarter). However, of these, 38 appeared in review serials and must therefore be excluded; this means that 187 actually appeared in primary journal literature in the sample. The total number of review serial items will be negligible compared with the total listing, so that the incidence in the primary literature is 1.03 per cent. Extrapolating this to the complete ISI *Source Index* in 1972 indicates that 4,000 reviews in the primary journal literature were listed by ISI in 1972. Of the 187 primary journal items 156 contained more than forty references, a frequency of 83 per cent, which would indicate that 3,300 reviews with more than forty references were listed by ISI in 1972.

If it is assumed that the output of primary journal literature in 1972 was one million then the output of reviews with more than forty references would be about 8,500. Data elsewhere indicates that 15–25 per cent of reviews contain less than forty references, so that the incidence and output of all reviews in primary journals are computed to be 1.02—1.13 per cent and 10,200—11,300 respectively, of which about 4,000 would be listed by ISI.

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Reports

A small number of critical and state-of-art reviews are issued as reports; very often these form the first report in a series on a large project, or a literature survey in a particular area may have been commissioned as a project in itself. One issue each of *USGRA, STAR, NSA* and *R & D Abstracts* from spring 1972 was examined to identify the output of reviews in this medium; 14, 5, 4 and 15 reviews respectively were found (total 38). In order to eliminate overlap, all reports with NTIS accession numbers were eliminated from *STAR, NSA* and *R & D Abstracts* leaving 3, 4 and 11 respectively. Extrapolating to a full year indicates a total output of 450 reviews in reports in 1972.

Secondary services

A number of small secondary services (for example, *Nutrition Abstracts & Reviews, Automobile Abstracts*) include commissioned review articles as part of the service. These are usually good state-of-art reviews based as they are on the resources of the service concerned. However the total output of these is very small, probably less than 200 per year.

Overall publication of reviews in 1972

Using the figures obtained in the above paragraphs, the output of reviews of reasonable quality is estimated to be approximately 22,000 in 1972. This is made up as follows: review serials 4,500; primary journals 10,500; conference proceedings 4,000; books 2,500; reports 500. This appears to be rather less than 2 per cent of the world's total output of scientific and technical literature.

Identification of reviews

The study was commissioned in part to test the method of using the number of references in an item as a means of identification of reviews, especially in the primary journal literature. As the study progressed it became obvious that this could be useful as a filter but no more, and that already other indicators were consciously and subconsciously being used to identify review material.

Number of references as an indicator of review literature

As noted previously a sample of items with more than forty references was taken from the ISI *Source Index* for April–June 1972. This issue contained an estimated 91,000 items (exact figures are not available) out of the 387,805 listed by ISI in 1972. A total of 604 items (3.30 per cent of the sample) were found with forty or more references (including those flagged 'R') of which 193 (31.95 per cent) were judged to be reviews (plus 5 in social sciences). As might be expected, the proportion of reviews found increased as the number of references increased, so that virtually all items with more than one hundred references were reviews.

In order to test this method, samples of reviews were taken from (a) review serials and (b) items flagged 'R' by ISI in a 70 per cent sample of the *Source Index*, and were analysed with respect to the number of references (see Table 2). (Note that in the initial sample from ISI, not all items flagged 'R' with less than thirty references were in fact reviews and therefore the figures at this level were amended to the following proportions: 0–5 references 12 per cent; 6–10 references 40 per cent; 11–25 references 75 per cent; 26–30 references 90 per cent of the actual numbers found.)

	SAMPLE			
NO. OF REFERENCES	*Review serials*		*ISI 'R' items*	
	Numbers	cumulated per cent	Numbers	cumulated per cent
0–10	32	2.19	8	1.85
11–20	57	6.10	31	9.01
21–30	61	10.27	33	16.63
31–40	65	14.73	34	24.48
41–50	66	19.25	29	31.18
51–60	66	23.77	41	40.65
61–70	84	29.52	30	47.58
71–80	71	34.38	27	53.81
81–90	60	38.49	32	61.20
91–100	68	43.15	17	65.13
more than 100	830	100	154	100
TOTAL	1460	100	436	100

TABLE 2: *Distribution of references in two samples of reviews*

In both samples the distribution of references in reviews was fairly constant over the range 10–100 references, tailing off fairly slowly above 100 references in the case of reviews in review serials and rather more quickly for the ISI 'R' flagged reviews. Over the whole range, slight peaks in the distribution were discernible at about 60 references in the review serials sample and at about 45 references in the ISI 'R' items.

It would therefore appear that to rely solely on the number of references to identify reviews would miss 10–17 per cent of reviews if used at the thirty references level and 15–25 per cent if used at the forty references level. In the sample of items with more than forty references from ISI, only 35 per cent of items were judged to be reviews. A small survey of the same material indicated that by adopting a cut-off of thirty references, a total of 1,574 items (8.65 per cent of the sample) would need to have been examined (vs 604) in order to locate 238 reviews (vs 193), the extra 970 items yielding only a further 45 reviews. The overall frequency of reviews in the examined material would drop to 15 per cent.

Other indicators of review literature

When evaluating the sample of items from the ISI *Source Index* it became obvious that much of the literature could be correctly assigned as reviews or not using only the details given by ISI, and the following set of rules, using only the information contained in the ISI *Source Index* was drawn up to place items with more than forty references as reviews or otherwise.

Positive indicator (i.e. must be a review)

More than 100 references

Keyword in title (review, literature review/survey, overview, progress, recent)

Title otherwise states that it is a review

Published in a review serial

Partial indicator (i.e. likely to be a review)

40–100 references (the higher the number the greater the likelihood of being a review)

Indexed as a review (ISI 'R' flag)

Single authorship

Title indicates a review (generally merely the statement of the subject)

Negative indicator (i.e. not a review)

Title indicates experimental work (e.g. 'studies on' or part of a numbered series)

Appears in a journal which does not publish reviews (e.g. *Journal of the American Chemical Society*)

After some practice had been gained in identifying reviews by looking at the original articles, a sample of 108 unchecked items from the ISI sample were judged unseen and placed in four categories: definitely review; probably review; probably not review; definitely not review. After this they were judged by examining the complete article. Altogether there were 32 reviews of which 30 had been placed in either of the first two categories, and overall 87 per cent of the items had been classified correctly. However, in the 'probably review' category, only 68 per cent were correctly assessed whereas in the other categories the assessment was 92–100 per cent correct. This indicates that there are certain features in reviews which can be used to identify them without consulting the original. They would appear to have value in discarding material which is obviously not review but the positive identification of most reviews requires examination of the original article.

Acknowledgement

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Behaviour patterns of scientists and engineers in information seeking for problem solving

Andrew Robertson

Polytechnic of Central London

Introductory note

THIS SHORT PAPER owes its origin to a transcript of five tape-recordings made by a group of scientists and engineers on behalf of Aslib Research Department. The transcript, made some years ago, has never been published because of its confidential nature. However, a reading and simple analysis do not breach any confidences, and it is hoped that the notes which follow will be of contemporary interest and perhaps of assistance in the further understanding of how to meet the information needs of research workers.

Introduction

A recent writer on information needs for R&D managers classified their requirements into scientific and technical, specific business, and general social and economic information, remarking that the first category 'presents the greatest difficulty for the specialist, rather than for the manager' (Sugden, R. *& D. Management*, 3, 2, 1973). A reading of the five transcripts demonstrates amply the difficulty encountered by scientists working in areas of narrow specialization of finding information relevant to their needs, mainly because of the scarcity of it rather than retrieval problems. But the reservation has to be made that the scarcity may have been more apparent than real and that a more broadly based information system might have revealed more information sources to them than were 'visible' or attainable under prevailing conditions.

The five subjects who kept the tape-recorded diaries were drawn from universities (two), industry (two) and a government research station (one). Their disciplines were physiology, metallurgy, chemistry, electrical engineering and mechanical engineering (not relative to the foregoing list). They shall be referred to by the letters A to E and will be identified by their working environment rather than their discipline. A and B are from academic research laboratories, C and D from industrial companies, and E from a research station.

As others have noted in the past (although the author does not know of a similar attempt to record the information seeking behaviour of scientists and engineers) there is a primary difficulty in the classification of information sources. To begin with it is easy enough, apparently, to separate internal from external information 'events'. But what of the colleague who hands over a journal containing an article which he thinks may be of use? It was clearly important from the outset to define each information seeking event in a way that would assist rather than blur understanding of the behaviour patterns.

The following broad typology was devised for the purpose of this analysis, but it is obviously open to criticism and variation. It has become part of the conventional wisdom in information studies dealing with scientific and technical information that one of the richest sources is person-to-person, or transfer of technology by personal movement; agents not agencies in the words of Professor Tom Burns. In addition, empirical studies and experience uphold the view that it is informal contact which produces the best transfer of knowledge rather than formal. But what do these terms mean in a given situation?

In each case under review here the individual was surrounded by colleagues, some senior, a number of peers and some junior or subordinate. Whenever it seemed that an information exchange had been sought in an official manner, by appointment, by reporting, by attending or calling a meeting or by a regular channel the event was noted as 'internal, personal, formal'. Otherwise it was 'internal, personal, informal', which would include chance encounters, casual conversations, social occasions and so on. If the event took place outside the working environment with a person not employed in the individual's organization the same would apply, with the first label being noted as 'external'. In the outcome, 'external personal formal' events were so rare that they could be ignored in this small group.

Another decision that had to be made was whether an event scored if no information of use was forthcoming. In most instances either a bit of information was found or a lead to a bit of information, and there were relatively few events which were absolutely barren. But it was decided that if the attempt had been made, even without reward in the form of information, it was still an information-seeking event and should be counted. It proved to be unnecessary to register and analyse the comparative values of sources in terms of useful information because of the smallness of the group and the irregular patterns of recording (C's tape was detailed and lengthy, whereas two others were short and rather general). It would have been extremely rewarding to have been able to evaluate the comparative practical usefulness of different sources.

A further difficulty arose with what we shall call multiple descriptions. For example, one of the scientists recorded that he had attended a conference at which he had met a company technician and asked him about problems he was having with his research. Should this be classified as 'external, personal, informal' or 'firm' or 'conference/exhibition', or all three? It was decided for the time being to restrict each event to one descriptor and that in this case it should be the first of these three, because the third should identify such events where the individual received information from the proceedings or the exhibits, and in the second instance from the firm as a direct inquiry. Where conference proceedings were reported to a subject or read by him to seek information the event was classified under the third of the three classes listed above.

A further difficulty arose in the definition of internal library/information service events. The following interim definition was used. Where the library/information service was in the nature of SDI, specific dissemination of information, it was so counted; for example, where marked journals, cuttings, photocopies and references were supplied, or where the subject made a specific request. If a journal was in general circulation, unmarked, and was referred to it was counted as 'external, journal' and similarly with abstract services, although there was some doubt as to whether these should not be included under 'external library/information service'. It was decided that the latter was so counted if the subject made direct use of the service.

The detailed recordings often show an information inquiry and the response as two events because they took place on different dates. In the following analysis they are scored as one event. Finally, though by no means exhaustively, if outside information was sought by an agent or agency in the individual's organization it was counted as external. For example, if he asked his library for information and they sought it outside, it was counted as an external event, just as if the individual himself had made the effort.

Results

In the following tables ten broad categories of information-seeking events are shown: four internal–personal, both informal and formal, library/SDI and other; and six external–personal informal, library/SDI, journal, conference/exhibition (including seminars, etc.), firm and other.

	Personal informal	Personal formal	Library/SDI	Other
A	40	10	10	3
B	55	9	9	5
C	41	13	4	2
D	12	14	6	2
E	9	12	8	5

TABLE 1: *Internal information seeking events* (%)

	Personal informal	Library/ Information service	Journal	Conference/ Exhibition	Firm	Other
A	3	5	13	3	11	3
B	5	5	3	3	7	0
C	3	3	22	2	9	1
D	2	36	8	0	20	0
E	3*	0	40†	8	5	0

* In this case there were a few formal external personal contacts, the only examples recorded. They were meetings arranged at another university.

† Ten of these references related to Chemical Abstracts.

TABLE 2: *External information seeking events* (%)

Because of the uneven lengths of the transcripts it has, of course, been necessary to transpose the numbers of events into percentages, to give some basis of comparison. In the class 1 events, 'internal personal informal', most of the figures were high and the percentages fairly meaningful. In those categories where the numbers of events were negligible the percentages are crude, fractions having been excluded for obvious reasons. There are, therefore, a few columns which total ± 100 per cent. There are two other reservations: the two tables, internal and external events, have been divided for convenience, but their percentages total around 100 *together*, so that comparisons may be made between individual categories, as well as between the two; furthermore, the identification of the type of event is subjective. The writer has not been in contact with the individuals concerned but has merely read the transcripts. When recording their diaries the respondents did not always manage to make clear precisely what type of event was taking place, but described what they had done or had caused to be done. It was therefore left to the reader to decide into which class of event to put each particular information seeking effort.

Further error will have entered into the comparisons in the conversion to percentages, because some of the numbers were small and also because it was thought expedient to seek only a basis of comparison rather than a high order of numerical accuracy, which might have seemed rather overweening in the light of the state of the data.

	Internal total	External total
A	63	38
B	78	23
C	60	40
D	34	66
E	44	56

TABLE 3: *External and internal information seeking events compared* (%)

Discussion

Looking at the tables, if the internal-external totals are considered first (Table 3), it is noticeable that D, the metallurgist with a company, tended to go outside for his information, to information services and other firms. He also made the highest proportion of formal internal personal contacts, but it is equally noticeable that in this the five showed closely similar patterns, probably because in every case there were regular meetings, reporting sessions and discussions with superiors, whether tutors or managers.

A, B and C apparently all had active internal contacts, particularly the personal informal type. A was an academic physiologist, B an academic applied physicist (electronics), while C was an industrial engineer particularly involved with design ergonomics. A and C made much more use of journals than B, however, but this may have been because B's subject of research had received little attention in the existing literature (as far as he and his contacts were able to ascertain, at least).

In addition to informal in-house sources, A found journals and firms helpful, but his tape suggests that his internal formal contacts were not of use. B relied heavily on in-house informal sources (fellow research workers and other departments mainly) and hardly used any other except for the library/information service but, as we have noted, his subject was at that time not well documented. This suggests that the nature of the project is at least as important as the working environment in shaping the information seeking behaviour pattern.

C's pattern is mainly a mixture of internal personal informal contacts and journal consultation. These were frequently intermingled, with a journal or even a newspaper article sparking off a discussion of a new material, a new design technique or manufacturing technique, a reference to anthropometrics or anatomy, because C's project was one with a multidisciplinary content and a practical objective. If anything C was oversupplied with information, at one point lamenting to his tape-recorder that, the project having reached an advanced phase requiring him to spend more time in the laboratories and workshops, he had a stack of 40–50 journals to read and would not have the time. C clearly felt that the published literature would be bound to yield helpful information and should not be neglected. His colleagues reacted to this attitude and constantly passed him references, with the result that he was saturated with information.

The contrast with D is interesting, as he was also working in a business environment, a metallurgist seeking a special alloy which would have specific characteristics. There is a suspicion in the writer's mind that D may not have recorded all his internal personal informal contacts or events, perhaps because he thought them trivial. Similarly C may have over-recorded, as he taped apparently every event involving colleagues. However, D certainly did concentrate on the use of outside information services, but again there is a caveat. His tape was short and evidently referred to the early stages of his project. There is little doubt that the information seeking pattern changes as a project matures, with the possibility that in some cases the first phase involves literature search much more than the later phases. D also went outside to other firms, mainly collecting technical literature and specifications.

E was not one of a pair. A and B were academic, C and D industrial. E was a bit of both, a chemist working in a publicly-funded research station, his project being concerned with surface wetting of solids. He also made only a short tape, which may explain the emphasis on journals and abstracts, as he stopped recording in the early stages of his work. However, there is another aspect of this particular case. The research problem was one with a copious literature in the technical journals and the respondent was anxious to miss no reference that might accelerate his arrival at a satisfactory conclusion. At first the abstracts were placed under 'internal, other' which would have classified those references with books, theses (he not only consulted two, he worked with them beside him), reports and other sources than journals. He also made more use of conferences and exhibitions than the other four. It cannot be concluded, of course, that either the work environment or the project determine the ways in which a research worker seeks information. His organization structure may also be a determinant, among others. In fact A, B and E all worked close to their information services or libraries, a matter of a few minutes' walk along a corridor, and there is a slight indication that they all used them more than C and D, but it is insignificant.

Conclusions

With such an uneven collection of data it is obviously impossible to draw firm conclusions. In one or two cases, notably those of B and C, there is enough detail in the record to provide a fairly clear idea of their predicament and their reactions to it in terms of information seeking. Different individuals in the same situation would probably have acted in different ways (for example, a less sociable person than C would have stemmed the flood of journal references from colleagues—and lost by it?). A's formal contacts were more of a hindrance than a help. E might be considered to have overdone the preliminary reading. One cannot help noticing the similarities between the two academics, A and B, and the disparities between C and D, the two in industry, but with a group of five there is nothing more conclusive to be said.

Diary keeping by managers, to analyse their job content, analyse their roles, and discover how they spend their working hours, has been carried out with some useful results in terms of their education and training needs. With the Aslib example to follow it may now be worth trying this method of investigating the information needs of scientists and engineers according to their environment and R&D problems.

Background note by John Martyn

The experiment whose results have been analysed above by Mr Robertson was an exploratory study which was intended to do two things. One was to test the feasibility of using tape-recorders to collect detailed data on scientists' work patterns and information handling activities over a long period of time. The other was to examine the usefulness of the data so collected, in shedding light on the sources of information and new ideas, the interaction of sources and the role of the formal documentary source.

The experiment began in the spring of 1964 and ran for approximately one year. The tape-recorders used were Fi-Cord 101s, battery-powered, spool-to-spool machines, weighing 3 lb and measuring 6 in. × 3 in. × 1 in., incorporating a body microphone-playback speaker. One spool of tape ran for 48 minutes, using both tracks consecutively, and tapes were returned and replaced in protective postal cartons. Tapes were transcribed at Aslib and the data acquired was supplemented and clarified by direct contact with the scientists involved. The equipment was reliable and worked well, but if a similar experiment were to be carried out now, lighter cassette recorders would probably be found more suitable. The numbers of tapes received were 36, 11, 8, 2 and 1.

Specifically on methodology, two points are worth mention. One is the considerable effect a tape-recorder has on its users. The investigator (Mrs Patricia Deeks) comments that 'If I were making recommendations to heads of research I would strongly urge them to supply all their staff with tape-recorders. It would appear that having to focus his ideas and to ask what he intends to do about something is a useful way of making the scientist come to conclusions and in the actual act of recording to realize new thoughts of actions.' Two comments by the scientists. 'Saying it to you on the tape makes me suddenly realize that we could do . . .' and 'With no-one else in the environment I feel that even to discuss it with my pet tape was a good thing.' It is possible that the preference of research workers for informal channels of communication stems from the greater facility in a conversational mode to structure one's thoughts on a topic, and that some of the performance of these channels is attributable, not to their success in providing information from authors, but to their usefulness in drawing information and ideas from within oneself. A point worth mentioning is that tape transcription of the kind involved in this experiment is very laborious and often difficult. One researcher can handle about three industrious tape-correspondents, and although there were five of the latter in this study, it was only possible for Mrs Deeks to keep up with them because they were not submitting tapes equally frequently. The task is complicated by what Mrs Deeks described as the perceived 'difficulty or even inability of the scientist to state in words what information he was looking for in such a way that another person could find what he needed!'

The transcriptions have never been, and will never be published, because of a veto by one of the scientists and one of the industrial organizations concerned.

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Publicity and promotion for information services in university libraries

John Hall

Department of Librarianship, Leeds Polytechnic

Abstract

A survey of information services in university libraries also obtained details of the methods used to publicize these services. A distinction is made between active and passive forms of publicity, and it was found that the latter predominated. Active publicity was used most frequently by the technological university libraries and less by those of the civic and new universities, although the former compared favourably in some respects. The lowest level of publicity was found in the libraries of the London colleges.

Introduction

INCREASING ATTENTION HAS been given to the provision of information services by university libraries in recent years, and a survey of these services was carried out by the author in the autumn of 1973 for a SCONUL exchange of experience seminar on this subject. The survey covered 69 libraries, including those of all the independent universities of the United Kingdom, the constituent colleges of the University of Wales, the non-medical colleges of the University of London, The University of London Institute of Education and Cranfield Institute of Technology. After the exclusion of replies from Oxford, Cambridge and the University of London Institute of Education, which were considered to be atypical, a response from 60 libraries (87 per cent) was obtained. Part of the report on the survey, in the form of profiles of the services provided by each library which responded, has been published with the proceedings of the seminar[1] and the principal findings of a more detailed analysis, not yet published, are given in Table 1.

There are four main categories of university library in the United Kingdom: the civic universities (including the Scottish universities and most of the colleges of the University of Wales; the colleges of the University of London; the ten 'new' universities established between 1961 and 1965; the ten technological universities, mostly former colleges of advanced technology, established between 1964 and 1969. The figures in Table 1 have been analysed by these categories to illustrate how their differing traditions and philosophies have affected the provision of information services. Cranfield Institute of Technology and the institutes of technology of the universities of Manchester and Wales have been included with the technological universities, as their subject bias and origins make it more appropriate to consider them in this group. The Open University, which does not readily fall into any category, has been included with the new universities for the purpose of analysis. The total response for each category of library was as follows: civic 24 (88.9 per cent); London Colleges 13 (86.7 per cent); new 10 (90.9 per cent); technological 13 (100 per cent).

Although it must be emphasized that in many cases, particularly among the civic universities, a given service was only provided for a minority of users within any institution, for example, one departmental library or subject division might provide some form of current awareness service while others did not, Table 1 shows that the principle of information provision is widely accepted by both the technological and new university libraries and also by a significant number of civic university libraries, with only those of the London colleges lagging noticeable behind.

	Civic	London college	New	Technological	Total
With staff devoting most, or a significant part of their time to information work	8 33.3%*	1 7.7%	6 60%	7 58.3%	22. 36.7%
Providing literature searches in some circumstances	14 58.3%	5 38.5%	7 70%	10 76.9%	36 60%
Providing some form of manual current awareness service	13 54.2%	5 38.5%	6 60%	10 76.9%	35 58.3%
Involved with publicity for or assistance with computer based information services	16 66.6%	4 30.8%	6 60%	12 92.3%	38 63.6%

* Percentages given are of the total replies received from each category of library.

TABLE 1: *Information services provided by British university libraries*

It is commonplace, however, that scientists, and particularly academic scientists, do not turn automatically to the library as a first recourse when seeking information, and the promotion of library-based information services can sometimes be a problem, especially in older universities where the tradition of self-help is more firmly established. For this reason the survey also attempted to find out what methods university libraries were using to promote their information services; the data collected on this subject is analysed below.

Analysis

Of the 54 libraries which provided one or more of the services covered by the survey, 48 (89 per cent) made some attempt to publicize their efforts. This included all of the technological and new universities, 21 of the 22 civic universities and 7 of the 12 London colleges, though a few respondents from the two latter categories made the point that publicity was of an irregular or *ad hoc* nature. Fourteen different methods of publicity were mentioned by more than one library: these are listed in Table 2.

	Civic	London college	New	Technological	Total
Readers' guides	20 90.9%*	4 33·3%	8 100%	9 75%	41 75·9%
Personal contact	12 54·5%	1 8.3%	4 50%	10 83.3%	27 50%
Letters and circulars	8 36.4%	1 8.3%	2 25%	3 25%	14 25·9%
Library or university newsletter	5 22.7%	2 16.7%	1 12.5%	5 41·7%	13 24%
Talks or tape/slide presentations to new students	8 36.4%	— —	1 12.5%	4 33·3%	13 24%
Other library teaching	6 27·3%	— —	2 25%	4 33·3%	12 22.2%
Notices	8 36.4%	— —	2 25%	2 16.7%	12 22.2%
Library publications other than readers' guides	7 31.8%	1 8.3%	3 37·5%	1 8.3%	12 22.2%
Through departmental library representatives	3 13.6%	1 8.3%	— —	2 16.7%	6 11.1%
Exhibitions	3 13.6%	— —	— —	1 8.3%	4 7·4%
At departmental staff meetings	1 4·5%	— —	1 12.5%	2 16.7%	4 7·4%
In annual reports	— —	2 16.7%	— —	1 8.3%	3 5.6%
Personal visits to staff	— —	— —	1 12.5%	1 8.3%	2 3·7%
Photographs of library staff	— —	— —	— —	2 16.7%	2 3·7%
Other	6 27·3%	— —	— —	1 8.3%	7 12.8%
None	1 4·5%	5 41·7%	— —	— —	6 11.1%

* Percentages given are of all the libraries in each category offering one or more of the information services covered by the survey.

TABLE 2: *Ways in which information services were publicized*

Discussion

The way in which information services are publicized is crucial. The importance of regular personal contact with users in the provision of effective information services has often been stressed, most recently by Evans[1] and in the discussion on the papers read at the above-mentioned seminar.[2] Equally, active publicity, the systematic announcement of services to individuals, by letter, or even better by word of mouth, is inevitably more efficacious than passive description in library handouts, which may or may not be read, or even in the notices which can so often become unnoticed parts of the library furniture.

Passive methods, nevertheless, predominated; by far the most frequently cited form of publicity was description in a readers' guide to the library. This was mentioned by 75.9 per cent of all libraries and was the most frequently occurring form of publicity in the civic and new universities and in the London colleges. The apparently active method of publicity by personal contact was mentioned by 50 per cent of libraries but, as it was not usually clear in what context this took place, it is impossible to tell how often it was carried out regularly as a matter of policy and how often it was the result of the occasional fortuitous meeting with a reader. The only indubitably active form of publicity mentioned by moderately high numbers of libraries was the use of individual letters or circulars. This was listed by 25.9 per cent of libraries, but the most active form of publicity, systematic personal visits to potential users, was mentioned by only 3.7 per cent of the total.

The technological universities made most use of active publicity methods, particularly personal contact, which at 83.3 per cent was significantly higher than any other category. They also made moderately heavy use of letters and circulars (25 per cent) and newsletters (41.7 per cent), the latter again more than any other category. They rated equally with the new universities on visits to staff and higher than other categories on use of departmental library representatives and attendance at departmental staff meetings, though these last three types of publicity were very little used by any category of library. They also showed a flair for the visual media, or perhaps incipient narcissism, as two of them mentioned photographs of library staff as a form of publicity, the only type of library to do so.

The civic universities showed a very high use of readers' guides (90.9 per cent) and middling use of other passive forms of publicity, such as notices (36.4 per cent), higher than any other category, and mention in library publications other than readers' guides (31.8 per cent). However they also compared quite favourably with the technological universities in the use of active publicity, rating highest on the use of individual circulars and letters (36.4 per cent), exhibitions (13.6 per cent) and talks or tape/slide presentations to new students (36.4 per cent), and second to the technological universities in the use of newsletters (22.7 per cent) and personal contact (54.5 per cent).

The new universities, surprisingly, in view of their small size, predominantly subject organization and relatively high number of staff devoting most, or a significant part, of their time to information work, did not approach the technological or even the civic universities in actively promoting their information services. While 50 per cent mentioned personal contact, this was considerably less than the technological and marginally less than the civic universities. Two (25 per cent) mentioned individual letters or circulars, but only one used a library or university newsletter, less than any other category. One also mentioned attendance at departmental staff meetings, although curiously, no new university mentioned publicity to departmental library representatives, though this must surely take place. They did, however, make heavy use of library publications: all mentioned readers' guides and 37.5 per cent other library publications, in both cases more than any other category of library.

Publicity for services was lowest among the London colleges; 33.3 per cent mentioned readers' guides but in this, as in most other forms of publicity, they rated well below the other categories of library, though, in view of the smaller size of many of them and their generally low level of information provision, this was to be expected.

Seven libraries listed forms of publicity which were not mentioned by any other institution. These included an article in a students' newspaper, a tape/slide presentation located near the enquiry desk, lists of services on the back of the library membership card and publicity for services given by teaching staff to their students.

The various methods of publicity were used by libraries in a wide variety of combinations and, while the most frequent basic permutations were of readers' guides, personal contact, individual letters and circulars and notices, no one complete combination predominated. Four libraries (7 per cent) mentioned one method only, seventeen (31 per cent) two methods, six (11 per cent) three methods, nine (17 per cent) four methods, three (6 per cent) five methods, three, six methods, two (4 per cent) seven methods and one (2 per cent) each eight, ten and eleven methods respectively. The higher figures all involve libraries with major departmental libraries or subject divisions and each method was not used by all the sections which responded.

Conclusions

The form of publicity for information services is obviously dependent on the level of information service provided—the London colleges offered the lowest level of service and made the least effort to publicize it—while other libraries providing in-depth information services on request may not wish to embark on blanket publicity campaigns which would overload their information staff. However, with these qualifications, it would appear from the findings of the survey that, although increasing numbers of libraries are willing to offer information services to some of their readers at least, many outside the technological universities are still publicizing this new venture in a relatively ineffectual way.

REFERENCES

1 EVANS, S. Information services for universities. *Aslib Proceedings*, **25**, 1973, p. 484–90.

2 Survey of information services in university libraries: library profiles *in* F. H. Ayres *and* J. Hall (*eds.*) *Information services in university libraries: proceedings of a SCONUL exchange of experience seminar on information services in university libraries held at the University of Bradford,* 17th–19th December 1973. SCONUL, 1974.

RAPRA—looking to the 80's

Dorothy R. Dawson

Rubber and Plastics Research Association

Paper presented at an Aslib Northern/Midland Branch Joint Annual Conference on Information Services, Scarborough, 6th–8th June 1974

Introduction

CHANGES IN THE rubber and plastics industries must, of necessity, be mirrored in the work of the Rubber and Plastics Research Association (RAPRA). Also a swing is taking place from income based primarily on member subscriptions coupled with a Government grant to the more commercial approach involving a reduction of grant coupled with the development of income from contract and consultative work. Such changes affect all departments of the Association and during the past ten years radical changes have taken place in RAPRA's approach to the management of information. This paper describes these changes, why they were necessary, and concludes with a brief look at areas still to be developed.

Pre-change years

The information services as established by RAPRA in the 1920's followed a well-recognized pattern. Information was recorded in the form of classified abstracts. These abstracts were used to produce the current awareness periodical *Summary of Current Literature*, now known as *RAPRA Abstracts*, and its various satellite journals. The abstracts were also cumulatively filed in classified card form for the purpose of retrospective searching. The retrospective searches emanated either from direct requests by members or from topical requirements of the day and usually resulted in the preparation of comprehensive annotated bibliographies. The need for data-based recording of information was recognized very early on, as is shown by the trade name and company information files held at RAPRA. But the whole emphasis was on comprehensiveness and all procedures were manual.

From the establishment of the Research Association in 1919 until the early sixties changes in information work lay not in method but in expansion of subject. The collection of economic and company information commenced in 1933. The commercial development of synthetic rubbers and thermoplastics during the last war brought a further expansion. With the amalgamation of the British Plastics Federation and RAPRA libraries, thermosetting polymers came under RAPRA's umbrella. These expansions brought in their train revisions of the specialized classification system developed at RAPRA but did not affect the methods originally established for the handling of information. This setting of the scene upon which the changes of the last ten years have impinged is perhaps somewhat over-simplified for then, as now, the requirements of users have always been RAPRA's prime concern and, for example, a degree of selectivity and less comprehensive answers to enquiries were on the way more than ten years ago.

Reasons for change

Tables 1 and 2 show increases in information personnel and increases in stock and services at ten-year intervals from 1944 to date. Two factors emerge—increase in publications and increase of demand from industry—both of which add up to mounting costs for RAPRA. Add to this the now steadily increasing cost of materials and manpower and we have a powerful motive for implementing changes which will help to contain the economic explosion. Although information units have always experienced economic pressure, never have they felt it so much as during the last decade and particularly so during the past two to three years, nor is the pressure likely to decrease in the forseeable future.

	1944	1954	1964	1974
Staff	8	12	16	21
Assistants	7	6	13	10

TABLE 1: *Information Personnel*

	Journal titles	Additions	Abstracts	Enquiries	Loans
1944	212	2,616	—	—	2,865
1954	388	2,489	14,436	1,900	5,971
1964	509	3,391	26,698	2,571	10,098
1973	553	2,342	19,145	4,010	27,391

TABLE 2: *Stock and Services*

Not only is the demand from industry increasing in volume. Increasing pressure on users brought in its train demands for additional services such as SDI, abstracts in computer readable format, better published indexes, and more bibliographies on subjects of topical interest, all in addition to the already established services.

How does one, therefore, meet the demands being made and yet at the same time offset the costs incurred by increasing income and reducing some of the existing operating costs?

Containment

The problem was approached in two ways, firstly by containing increases in various ways and secondly by the introduction of new methods. First, let us take a brief look at methods of containment, some of which became possible due to developments external to RAPRA and the polymer industry. Selectivity became the key word: for example, the purely sales type of trade publications are now rejected or only held for short periods of time, currently received journals providing low percentage return or duplication of information were eliminated, testing specifications for major countries only are retained in stock.

On the applied technology side it proved possible to eliminate most short articles and notes. The polymer industry, because of its very nature, not only provides its own end-products but also provides materials for the end-products of other industries such as man-made fibres and textiles, paints, and packaging materials. As there are Research Associations for these industries a higher degree of selectivity is now exercised in these areas also.

External developments such as the establishment of the Lending Division of the British Library and international agreements concerning supply of patent specifications made it possible on the one hand to reduce holdings of some journals to ten years only, and on the other hand to reduce holdings of patents specifications to a very limited number of major topics. The advent of photocopying techniques eradicated much lending of documents and made it possible to very nearly eliminate all holdings of duplicate journals, exceptions being short-term holdings of current issues of heavily used journals and loose copies of some of our early but bulky bound volumes that are unsuitable for photocopying. It is worth noting at this point that photocopying techniques have been largely responsible for holding in bounds the labour and postal costs of our apparently ever-expanding loans department.

Thus there is a swing from the pre-war pattern of emphasis on complete coverage to a high degree of selectivity using methods that are well known to most of us in the UK but not yet fully appreciated in all areas of the Western World.

Change in method

Two of the basic processes in information work have a high degree of interdependence, namely collation and dissemination (including retrospective searching). It is in these areas wherein lie the most expensive functions in relation to man-power, and in these areas RAPRA's management of information has shown the greatest change.

Computer Database (ASSASSIN)

An investigation of the procedures in operation at RAPRA coupled with an investigation of computer systems available led first to the adoption of the ASSASSIN suite of programmes developed by ICI Agricultural Division. The three major reasons for the choice were:

1. The facility to input abstracts as well as references and abstract numbers.
2. The ability to handle data on chemistry, technology and economics.
3. Compatibility of ASSASSIN tapes with other systems.

In July 1971, *RAPRA Abstracts* was changed from a monthly to a weekly publication schedule for the journal article and patent sections, the smaller sections retaining a monthly cycle. This change was carried out partly to speed up publication and partly to match proposed computing operations with an existing, but limited, manual SDI service.

In January 1972, input to RAPRA's own database and the provision of computer readable tapes commenced using an IBM 360/65 on a bureau basis. It was at this time restricted to abstracts of journal articles excluding those on economics.

All data preparation is carried out at RAPRA and programmable 2201 Friden Flexowriter tape typewriters are used in a two-stage process. The abstract, bibliographical details and special ASSASSIN control characters are typed onto a 5 in. × 8 in. card, a punched paper tape carrying the foregoing items plus print control codes being produced at the same time. The card is used for proof reading, corrections on card and tape are made, and then the tapes are read back through the Flexowriter in a select mode to produce simultaneously copy minus ASSASSIN control characters for the lithographic reproduction of *RAPRA Abstracts* and a paper tape minus print control codes for input to ASSASSIN. Thus one typing operation produces:

1. Copy for *RAPRA Abstracts.*
2. Computer readable copy.
3. Abstract cards for the cumulative classified file.

Further computer input for thesaurus up-dating, SDI work and KWOC's is by 80-column card punched and verified by a local firm from data prepared at RAPRA. Storage is on magnetic discs and magnetic tapes are also produced for users who require them.

During the second half of the year the in-house single and corporate author card index for journal articles was replaced by full KWOC's produced monthly and accumulated at six-monthly intervals. At the same time the name index for the equivalent section in *RAPRA Abstracts* was produced as a six-monthly condensed KWOC printout suitable for lithographic reproduction. In the meantime, some of the research staff agreed to act as guinea pigs for the setting up of SDI profiles. This latter work led to the replacement of the manual SDI service by a computerized one at the beginning of 1973, and to date there are over one hundred customers.

Library catalogue

In January 1973, input began of the abstracts for all documents other than journal articles and patents, namely those documents listed in the monthly 'Additions to the RAPRA Library'. As the initial spade work of establishing an ASSASSIN database for RAPRA had already been accomplished the largest problem at this second stage lay in the adaptation of a standard catalogue entry to match the ASSASSIN programme in order to produce a library catalogue in the form of a full KWOC, as a by-product of the input.

As no term may exceed 50 digits it was necessary to build up a set of suitable abbreviations for a percentage of the corporate authors, and a second set of abbreviations to handle listing by series numbers for documents such as specifications.

These sets of abbreviations are being added to continuously as the need arises, in much the same way as the thesaurus of subject terms. An extension of the word typing was required to include titles, specifications and other series, and it was necessary to include a coding to safeguard the exclusion of confidential documents from searches unless they are specifically required. It proved to be more satisfactory to produce the 'Assassinated' catalogue in the form of two KWOC's, one listing titles and authors and the other listing the various series in numerical order. These KWOC's are each cumulated monthly.

Conference papers

At the beginning of this year abstracts of conference papers were added to the input programme, thus increasing the database for SDI and retrospective searches. Full and condensed KWOC's are supplying the author listings for in-house and *RAPRA Abstracts* use in the same way as for journal articles.

Thus a series of full KWOC's for in-house use is taking the place of some of the former card files, with a very considerable reduction of much routine clerical work, a computer-based SDI service is established and a database for retrospective searching is being developed.

RAPRA Abstracts subject indexes

For this work a system different from ASSASSIN has been adopted. It is a system devised at the University of Sheffield Post-Graduate School of Librarianship and developed at the Shirley Institute. It produces a variation of the KWIC or articulated subject index. Basically the procedure involves writing for each abstract one or more phrases containing the concepts to be indexed listed in a meaningful way. These phrases are 'edited' by the computer to produce several headings.

Commercial information

The systems considered so far deal with the management of information concerned with technology and being handled on an abstract basis. However, the field of commercial information has not escaped scrutiny during the past few years.

The commercial information that has been required from RAPRA for many years has been very diverse and is perhaps best illustrated by taking a brief look at some typical enquiries:

1. Plastics end-use consumption in France, Italy and Germany—such purely statistical requests may be answered by extracting the relevant data from authoritative statistical sources or may be difficult or impossible to answer because of the lack of detail in statistical information in the polymer industry.
2. List of Danish and Norwegian rotational moulders—a straightforward directory-type enquiry.
3. Identification of trade names—usually the name is known and the enquirer wishes to identify the product or material.
4. Current and projected capacities of PVC producers in certain West European countries—this calls for company information on locations of plant, tonnages, processes and so on.
5. Applications and market trends for silicone rubbers in the UK—this is a familiar type of market survey request and usually requires a combination

of technical and commercial information if an adequate assessment is to be reached. In some cases costs may be involved and a degree of economic analysis may be called for. Such enquiries may lead to consultative work because of their comprehensiveness.

Such typical enquiries have been answered in the past from RAPRA's abstract files and data records of company information and trade names, together with information from published sources such as directories and compilations of statistics. But commerce is now such that more is being asked of RAPRA. Abstracts alone no longer suffice, a development of data recording is necessary, and analysis of information is required. Full market surveys are being requested and these surveys, carried out on a repayment basis, are taking up an important and increasing proportion of the time of the staff of the Economics Unit. Some enquiries result in sizeable collections of information; such collections together with others on topical subjects have formed the beginnings of our new series of *Economic Data Guides*, these being issued on a sales basis. The first Guide, 'Plastics in Marine Transport' presents an analysis of the current degree of penetration of plastics into this field, including statistics and descriptive material, and assesses the future prospects and the obstacles which are retarding the further development of plastics. A later Guide dealt with 'Recent Announcements of Capacity Expansions of Major Thermoplastics'.

The standard methods of retrieval via files of abstracts will continue to be required in the commercial information field, but much relevant information is scattered in technical articles. This is expensive to index or time-consuming to retrieve if one adheres rigidly to the well-tried abstracting techniques. Thus RAPRA is now reorganizing its collection of company information on a more far-reaching database than previously. It is anticipated that in carrying out this work gaps in the information will be identified and steps taken to fill the gaps, and that the work will eventually lead to some type of directory publication.

Conclusion

There are, naturally, areas of work still requiring revision or development. News items are not included in the present highly selective abstracting programme—recording of these economically is the problem; methods of indexing rather than abstracting them are under investigation at present. Computerization using ASSASSIN programmes is being tried and it is hoped will result in a full KWOC of the type described earlier. Trials in the computerization of the trade name records have also recently commenced. As it is not proposed to input the patents abstracted onto magnetic disc at present the name and numerical patent indexes for the patents section of *RAPRA Abstracts* are still prepared manually but a suitable in-house program for use with RAPRA's small computer is under trial. Trade statistics, as indicated earlier, do not always appear in sufficient detail; again this is a subject under consideration.

It has been impossible to do more than skim the surface of RAPRA's changing approach to the management of information and much has had to be omitted. The subject of costs, other than implied containment of cost, has not been discussed here, nor has the identification of the needs of users. The reader will have realized, however, that the provision of services tailored to meet the requirements of individual members or groups of members has been kept in mind during the planning of the new systems.

It is hoped that sufficient has been included to signpost the road on which RAPRA's Communications Group is travelling and to indicate that the tyres on which it travels are being kept at a proper pressure.

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Letters to the Editors

Sir,

No one who relies on your bibliography on the British Library will learn, unless he digs a bit deeper, that the whole proposal to build this monster in Bloomsbury is sheer criminal vandalism. Have you not heard, for instance, of the London Borough of Camden's publication *Bloomsbury: the case against destruction?* It came out in January this year, which is within the date-range of your items.

There is, emphatically, no need to put the new library there. The scheme should go the way of Maplin (last week) and Concorde (eventually): in its destruction of a community, its destruction of buildings, and its appalling permanence, it can only be a lasting shame on—of all people—*our* profession.

Yours faithfully,
JOHN GILLARD WATSON
Librarian, Institute of Economics
and Statistics, University of Oxford

Sir,

I hope you will not mind if I draw your attention to two major omissions from your most useful bibliography on the British Library in the May 1974 issue of *Aslib Proceedings*. These are:

CHAPLIN, A. H. *The British Library and AACR: report of a study commissioned by the Department of Education and Science*. London, Library Association, 1973. 86 pp. ISBN 0 85365 286 4.
(A superb analysis of the feasibility of AACR being adopted by the British Library, listed on page 11 of the July 1974 issue of *Aslib Information*).

LINE, M. ADP and the British Library. *Catalogue and Index*, no. 29, Spring 1973, p. 1, 7–9.
(Summary of a paper given at an evening meeting of the Library Association Cataloguing and Indexing Group).

As a former Secretary of the L.A. Cataloguing and Indexing Group, I was delighted to see so much of the Group's work noted in your bibliography.

Yours faithfully,
K. G. B. BAKEWELL
Senior Lecturer, Department of Library and Information Studies,
Liverpool Polytechnic.

BRIEF REVIEWS

WHO'S WHO IN THE MARKETING 1973–74. Epping, Gower, 1973. 701 pp. £10.90. (ISBN 0 7161 0206 4.)

The directory contains biographical information on the segment of management coming under the broad heading of marketing. It covers marketing personnel from three groups, the principal group being marketing directors and managers of industrial, commercial and marketing-orientated companies. This group also includes executives with a marketing background or particular interest in marketing. The second group covers advertising, consultancy and marketing research. The last group is the people indirectly concerned with marketing—secretariats of professional bodies and advisory organizations, journalists, professors and lecturers.

The volume consists of four sections: Contemporary Profiles, Register of Professional Bodies, Biographical Entries and the Indexes. The Contemporary Profiles are short biographies of six leading figures in marketing. The Register of Professional Bodies is an alphabetical list, within countries, of groups and associations of people in marketing. The main section, the Biographical Entries, are made up from the membership of the associations listed in the Register of Professional Bodies and contain information on: entrant's current position, products marketed and department controlled, as well as details of career, secondary positions, publications and lecturing. There are two indexes. The first is alphabetical by company, listing the marketing personnel appearing in the biographical entries in a given organization. The second index is classified according to branches of industry.

As with many new guides, there are several inconsistencies and errors, which hopefully will be sorted out before the next edition is published. There is no reference from the main section of biographical entries to the six profiles and no indication in the indexes that the entries for these six men are not in the main section. The entries in the main biographical section seem, by looking at the company index, to be slightly unbalanced: for example, there is only one biographical entry for Courtaulds and none for Proctor and Gamble, which are organizations having large marketing departments, whereas there are perhaps one or two entries for some relatively small companies. The last criticism is the reference throughout the preface to marketing men, although there are several biographical entries for women in the field.

Apart from the above minor faults this guide should prove a useful source of biographical information in a field which hitherto has not been documented.

WHO OWNS WHOM (Continental edition) 1972/73; vols. 1 and 2. 13th ed. Roskill, 1974. £24.

The publishers of *Who Owns Whom* are not content to stand on their laurels; each new edition tends not only to be an updating, but also to increase its coverage and present new features. This thirteenth edition is no exception. There is increased coverage of all countries, but particularly France and Sweden. There is a special section for France listing abbreviated names and what they signify, and this feature may be extended to cover certain other countries in future years.

The most important development, however, is the introduction of full postal addresses. This is another feature which will be extended in the future.

One section has been transferred from the Continental edition to the North America edition: the section on US parents of Continental European subsidiary and associate companies.

Prospective users should also be reminded of the most useful introduction, which describes the salient points of proposed EEC Commission rules governing mergers and cartels, West Germany cartel law, the control of multi-national companies, tax havens and harmonization of EEC company laws, and other developments in the company world, including the interesting fact that in Holland N.V. has been changed to B.V.

Anyone interested in continental companies and their relationships can hardly do without this publication.

LIDDIARD, E. A. G. *ed.* Register of consulting scientists and contract research organizations. 2nd ed. Stoke Poges, Bucks, Fulmer Research Institute, 1974. £5.

Little basic change has been made in the second edition of this very useful directory, first published in 1972. The one thousand or so entries for scientific, technical and engineering services are again allocated to one of five sections representing either the type of service offered or the type of organization offering the service. For example, part-time and full-time consulting services are listed separately as are those offering contract research facilities. University departments and Government-owned or subsidized laboratories are also allotted to different sections. Arrangement within sections is random. Most entries contain full name and address, telephone and telex numbers, names of principal officers, with qualifications and an indication of the relevant subject fields. In certain instances anonymity has been requested by an individual and the name and address has been omitted in the published list but is available from the Registrar. Each entry is uniquely identified by a category letter (A to E) and a number.

Access to entries is provided by means of a name index; individual consultants and organizations appear in the same sequence, while the subject approach is provided by an index of approximately one thousand headings, as in the first edition. A further breakdown in the subject index is given in some cases by the use of subheadings; for example, POLLUTION AND ITS CONTROL A2 (air & water), A12, A20, ... The difficulties of subject indexing are outlined in the five-page editorial. For those requiring further advice on the most appropriate consulting organization to approach the editorial contains the names of associations who hold information on consultants in particular disciplines. The editorial also contains detailed background information on the charges likely to be made for consultancy services in each category.

The information in each entry can only be as up-to-date as that supplied to the compiler and the accuracy is obviously difficult to assess—in our eagerness to be certain of obtaining our copy of the new edition Aslib apparently have neglected to send in an amended entry! Possibly the information this directory contains could be further exploited, for example by the inclusion of an index to all the principal officers named in the entries. The publishers are to be much commended, however, in these days of inflation for producing the second edition of this directory, containing approximately 15 per cent more entries, at the same price as the first edition. That it is an extremely useful book of all those wishing to trace details of consultants in a particular field, or those already known by name, will not be denied by anyone.

KRUZAS, A. T. *ed.* Encyclopedia of information systems and services. 2nd ed. Ann Arbor, Michigan, Kruzas Associates, 1974. 1271 pp. $77.50.

The first edition of *Encyclopedia of Information Systems and Services* in 1971 presented not only a vast amount of disparate information which had previously appeared in scattered sources, but also much which had not appeared in print before. This wealth of information in one volume has proved an excellent reference tool.

Now, with the publication of the second, enlarged, international edition, we are provided with detailed and useful descriptions of more than 1,750 organizations concerned with storing and disseminating information, including data base publishing companies, computer time-sharing and software companies, micrographic firms, special libraries, government agencies, data banks, information centres, and clearing-houses in science and technology, medicine, social sciences, education, and business and finance. Of the services covered 225 originate from 31 countries outside the USA.

Most of the information for each entry was obtained directly by questionnaire, letter, or telephone contact. Potential entries were identified from over 50 published directories and guides to information sources, and these are listed in a useful bibliography preceding the main part of the volume.

The descriptive portion of the book is arranged in two sections; the main section provides detailed descriptions of the major organizations and services, and the supplementary section (clearly marked) supplies compressed descriptions of those organizations for whom not so much information was available, perhaps because the information supplied was incomplete. Defunct and inactive organizations are also included in the supplement.

The details in each entry are provided under set headings, including date established, description of system or service, scope or subject coverage, input or data sources, holdings or storage media, serial publications, non-serial publications, microform applications and services, computer applications and services, computer and information processing equipment, user equipment requirements, use restrictions.

Thirteen indexes are provided, ranging from Combined Index to Organizations, Systems and Services, to Commercially Available Data Bases, SDI Services, and Abstracting and Indexing Services. The indexes are basically alphabetical by organization name. This is the only section where the *Encyclopedia* can be criticized, and there is room for strong criticism: there is no subject index, as there was in the first edition. This is a serious omission, for to have collected so much valuable information and not to have provided access by subject is a huge waste, which must be deeply regretted. It is to be hoped that the next edition in 1976 or thereabouts will rectify the situation. This omission mars what would otherwise be a first-class reference book, but which is in any case a very useful source.

ANGOFF, A. *ed.* Public relations for libraries: essays in communications techniques. London, Greenwood, 1974. 246 pp. £6.75. *Contributions in librarianship and information Science, no.* 5. (ISBN 0 8371 6060 X.)

Eleven essays relate the experiences of librarians who have not been trained in public relations but who have realized the importance of a public relations programme in the administration of a library, where 'communication' is the basis of its existence. Public relations programmes are described for: (1) metropolitan libraries; (2) a cooperative suburban library system, such as the Nassau Library system; (3) a small public library, the aim of which is to spread culture; (4) a school library, to maintain a good public school system; (5) a children's room, to arouse their various interests; (6) an academic library, stressing the role of displays on various topics; (7) a State Library; (8) a newspaper's library, such as the *New York Times*'; (9) a special library, stressing communication with other special libraries; (10) a new, developing library where the steps of the programme have to be set up. Bibliographies provide further readings on these themes.

KAISER, F. E. *ed.* Handling Special materials in libraries. New York, Special Libraries Association (SLA), 1974. 164 pp. $10.25. (ISBN 0 8711 211 6.)

This collection of papers grew out of a Short Course on Handling Special Materials in Libraries, held at the Georgia Institute of Technology, 2nd–4th February 1972. Librarians presented papers in their special field, most of which are included in this volume. Libraries must acquire, handle and make available all kinds of special materials for their users. Special materials covered here include: government publications, technical reports, maps, proprietary publications, company and trade literature, patents and trademarks, standards, symposia and conference records and related miscellaneous materials. A paper on the management and administration of special materials is given. A bibliography with a subject index, and a list of publishers, is also included.

SPYERS-DWAN, P. *and* GORE, D. *eds.* Management problems in serials work: proceedings of the conference held at Florida Atlantic University, Boca Raton, Florida, 26th–27th March 1973. London, Greenwood, 1974. 145 pp. £4.75. (ISBN 0 8371 7050 8.)

The conference focused on the management aspects of serials in libraries. Nine papers were given covering: a comparison between the Periodical Bank of the Associated Colleges of the Midwest (ACM) and the British National Lending Library; national and regional lending libraries; the National Serials Data Program, serials acquisitions; problems of chasing unreceived journals and ordering; subscriptions and access to journal literature; the future of the scholarly journal and journal binding.

ROBERTS, J. J. *ed.* American Society for Information Science, Western Canada Chapter: proceedings, Fifth Annual Meeting, Banff Centre, 26th–28th September, 1973. Calgary, Alberta, Information Systems, University of Calgary, 1973. 78 pp. $3.50.

The book contains the following papers presented at the meeting: (1) D. M. ALLEY *and* W. INGRAM, Documented discourse and the structure of national bibliographic organizations: implications and suggestions; (2) G. A. COOKE *and* P. SCHICK, KWIC but effective—indexing the unindexed speedily; (3) J. FOURNIER, Information retrieval: simplicity and complexity; (4) R. H. INGLES, Text-Pac system enhancements; (5) A. LO *and* G. A. COOKE, CABS—a computerized annotated bibliography system; (6) M. B. MCBURNEY, Periodicals automation at the University of Alberta; (7) J. J. ROBERTS, Indexing system design philosophy; (8) O. STANDERA, Networks—the future? Abstracts of the following papers are also included: T. S. ALLEN, A systems approach to information processing systems design serves many business applications; L. T. SHORTER, INTER-WEST.

COHAN, L. *ed.* Readers advisory service: selected topical book lists. New York, Science Associates/International, 1974–. $49.50 per annum.

As the blurb says, 'You can become a member of a new interlibrary network and receive booklists that represent the expertise of subject specialists at leading libraries and information centers' and 'It is estimated that some 200 libraries, information centers, scholarly societies, and professional associations will participate in this unique effort to make available to the total library community the vast storehouse of bibliographical expertise of which individual staff members are capable.'

The idea is that for an annual subscription of $49.50 a library will receive an estimated 75 bibliographies, a quarterly newsletter, and a ring binder. Each bibliography sent to the subscriber has LC and DDC classification numbers, and is produced in a standard format to fit the binder. The newsletter gives details of lists not sent to subscribers but available direct from other libraries, and there will also be a quarterly cumulative subject and title index to all RAS bibliographies.

This is really a formalized version of the service Aslib is offering to members (*see Aslib Information* vol. 2, no. 7, July 1974, p. 6).

The underlying principle is obviously a good one. However, the question arises as to whether any libraries outside universities, say, would want to receive bibliographies on such a wide range of topics. In the sample of the first twenty lists sent for review, the subjects range through 'Sickle Cell Anemia' to 'Guide to the Literature on Mass Transportation' and 'History of the Middle East'. It seems doubtful that a special library would want all of these. With the Aslib service we hope that members will be able to select those bibliographies they actually want.

NEUDER, G. F. *and* ULLRICH, H. M. Dictionary of Radiological Engineering. London, Pitman, 1974. 303 pp. £6.30. (ISBN 0 273 00360 7.)

As with other specialized disciplines, radiology has its own terminology. The synthesis of medicine and technology has produced technical terms which might be misinterpreted when the definition given in a general dictionary is applied, and so any dictionary drawing together some 3,000 radiological terms and their true equivalents in English, German and French is welcome.

This dictionary covers the terminology of radiological physics, radiology and X-ray equipment, plus that of anatomy, clinical radiology and radiography. Also included are terms contained in publications of the International Electrotechnical Commission, the Co-ordinating Committee of the Radiological Industries (COCIR) dictionary, and definitions found in laws, regulations, standards and directives. Variations in British and American usage are indicated wherever possible.

It seems likely that this dictionary will become a standard reference tool for all those concerned with the literature of the field of radiology.

KENT, R. Reading the Russian language: a guide for librarians and other professionals. New York, Dekker, 1974. 229 pp. $13.75. (ISBN 0 8247 6236 3.)

The book is designed to offer a basic course in Russian for librarians, enabling them to read specialized material. Chapter one begins with an introduction to the Russian alphabet and its English transliteration. In the following chapters many basic principles of Russian grammar are outlined, in each case quoting relevant examples to illustrate more clearly the meaning and context. Following the grammatical explanation in each chapter there is a translation exercise, followed by a translation of the exercise and full explanations. At the conclusion of the chapter an excerpt from a Russian reading is presented for independent work. An alphabetical list of terminology in librarianship and related disciplines is given for easy reference.

Directory of Operational Computer Applications in United Kingdom Libraries and Information Units

Edited by C.W.J. Wilson

£5.00; £3.50 members SBN 85142 054 0

After the Aslib Computer Applications Group came into existence in 1968 it set up a number of Working Parties. One of these, the Acquisitions, Cataloguing and Circulation Working Party (ACCWP), came to the conclusion that there was a real need for a directory of operational computer applications in United Kingdom libraries and information units. There have been previous surveys but these were partial, incomplete and in some cases did not always distinguish what was operational from what was planned or experimental.
The Directory is in three sections. First is a section in which it is possible to read off which libraries have particular applications. This is followed by a list of the libraries in alphabetical order, with their contributions. The third section is an index to named equipment, information systems, data bases and any other useful topics.

The Corporate Approach to Library Management

Proceedings of a one-day conference for chief librarians from local authority and educational institutions 22 June, 1973

Edited by P.A. Thomas and Valerie A. Ward

£3.00; £2.00 members SBN 85142 056 7

Aslib R & D Department is engaged in a research project, Librarians as Managers.
In the course of the investigations the increasing pace of management and organizational change became apparent. Both public and educational libraries are affected by recent developments within their parent organizations. Local authorities are going through a period of considerable upheaval and Polytechnic librarians are developing integrated services from previously separate college libraries.
Some librarians have already played an active role in planning for organizational change, and in applying modern management principles, many more will shortly be involved in such endeavours. It was thought that senior staff could well benefit from an opportunity to discuss the problems involved, and this publication is the proceedings of the conference that was arranged.

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UNIVERSITY OF CALCUTTA
CENTRAL LIBRARY

48th ASLIB ANNUAL CONFERENCE

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Further information about Aslib's services and membership rates will be supplied on application to the Director, Aslib, 3 Belgrave Square, London SW1X 8PL. Tel: 01-235 5050. Telex 23667; answer-back, Aslib London.

Notes for contributors

Aslib Proceedings now accepts contributed papers in addition to those presented at Aslib meetings and conferences. They should be of a practical nature and of some relevance to problems encountered in the everyday operation of library and information units, or services. Other kinds of contribution which will be considered for inclusion are short notes on new information units or special libraries; the introduction of new techniques or systems in existing libraries where these may be of general interest; equipment designed by members for special purposes and put into operation in their own organizations; and objective reports on experience with new 'packaged' commercially available information services.

Contributions, which should be typewritten, double spaced, single-sided on A4 paper, and not more than 3,000 words in length, should be addressed to the Editor, *Aslib Proceedings*, 3 Belgrave Square, London SW1X 8PL. If possible, authors should include a summary of up to 200 words with the typescript. Authors will receive twenty-five offprints of their article free of charge.

UNIVERSITY CALCUTTA

H.R.H. THE DUKE OF KENT

Speech given at Aslib's Jubilee Supper, Victoria and Albert Museum, on Friday, 27th September 1974.

I must confess to having something of a soft spot for abbreviations and for what I think are called acronyms. I suppose a good many years' familiarity with all those mellifluous military condensations like 'tpt.' for transport and 'arty.' for artillery rather tended to form a habit, but I find them useful and practical, in moderation. Nevertheless, when first confronted with your own acronymic title, I was a little puzzled. The immediate expectation conjured up by those five letters was of a pretty uninhibited, trendy outfit—perhaps some sort of a night club even—at any rate whose purpose was rather indefinite. This was encouraging but I had to admit I could think of no reason why such a liberated body should want me to be their President, except that it seemed to have its headquarters in the house where I was born, which perhaps was a good enough reason. And then of course the sight of Lord Shackleton's name at the bottom of the letter instantly removed all doubts about the Association's standing, although it was still some little while before I was able to understand precisely what Aslib meant.

Now 1974 is the fiftieth anniversary of Aslib's foundation and one quick look at what has happened in those fifty years brings home to one very strongly just how vital is the function of this association. It began after all with fairly modest aims, connected with the metal industry, but someone quickly had the foresight to recognize that as the arts and sciences advanced, so the volume of information produced was quickly becoming totally unwieldy—and that unless something was done to co-ordinate the storage and accessibility of all this material, a great deal of its value would be lost. Although the need was foreseen in the 1920's, the actual explosion—there is no other word—of information of all kinds that has occurred in the ensuing years must have vastly outstripped anyone's expectations. In a sense probably much of this process is self-generating and proliferating, so that for every learned paper written there are perhaps 10, 20 or 100 eager students of the same subject ready to add his or her variation to the experience—but this must make the task of the researcher or engineer or designer in any field so much more difficult—and his need for sound information management overwhelming.

We in this country have a pretty fine record of invention and innovation; in fact we are generally fertile in original ideas. But we have also acquired a less happy reputation for allowing others to reap the full benefit of those ideas by commercial exploitation. We simply cannot afford to let brilliant and original thinking fall on the stony ground of complacent officialdom compounded by inadequate means of disseminating or evaluating data. Aslib's role seems to be finding better ways of 'making the right connections' and if clearing the channels of information storage, exchange and retrieval can streamline this process, then I believe Aslib's contribution is of crucial importance. Nor of course are the Association's services by any means limited to handling technical data for industry and science—there are scores of information sources, on health, education, wages and salaries, motor vehicles, market surveys and many others on which a complex modern society depends.

I know that this association devotes a large part of its energy towards research into new methods of information management and no doubt you will have been considering some of these problems at Cambridge during the last few days. Technically, it seems to me the possibilities are now very encouraging, with modern computer techniques and data transmission systems. The constraints are likely to be finance, as always, and the will to make use of these systems when and where they are needed. The opportunities therefore for men and women with the right sort of vision to plan the future development of information services are vast. I think it was greatly to Aslib's credit, and also entirely consistent with their forward-looking concept of their role, that they should have hit on the idea of a competition to mark their Golden Jubilee year, in which the younger members of Aslib are invited to put forward their ideas as to how information services for all purposes might develop in the future. It is appropriate at this point to acknowledge the very generous support for Aslib's objectives that has been given by I.C.I. who have not only been active members of Aslib almost from the start, but have contributed the funds to make the competition possible.

I understand that the interest evoked by the competition has been very great and that a very wide variety of entries have been received from such diverse sources as the Civil Service, universities and public libraries as well as from industry and commerce. Such a response is I think very encouraging and an indication of the fundamental importance attached to this subject. Selecting the winner cannot have been an easy task among so many interesting and differing viewpoints, and because the standard of the two best papers was so close, Aslib itself has decided to award a special prize to the runner-up.

All praise and congratulations must go to the winner of the Jubilee Prize—Mr David Scarfe—and to the runner-up, Miss Susan Hartland. I salute them on their success and I know that the ideas they have expressed will be extremely valuable to Aslib in its work. I should like to end by offering to the Director and all members of Aslib my congratulations on this anniversary and my very warmest good wishes for its future success and prosperity.

ASLIB'S GOLDEN JUBILEE

ON THE occasion of the celebration of the 50th Anniversary of Aslib's foundation in September 1924, messages of congratulation and goodwill were received from a number of organizations at home and overseas.

From Mr Reg. Prentice, Secretary of State for Education and Science:
I am very happy to send my congratulations to Aslib on its 50th anniversary. The Department of Education and Science has had close ties with Aslib only since 1965 when it became responsible for the Government grant-in-aid, but I am well aware of the important contribution which the Association has made to the development and improvement of special libraries and information services over its entire history.

The Department has welcomed in particular the growth of research and educational activities, upon which much of Aslib's recent reputation has been founded. It has also valued close and continuing co-operation with Aslib, in the Council and at staff level, on a wide variety of activities.

Now that the British Library has been set up, with wide-ranging responsibilities for all types of library and information work, it is generally agreed that the responsibilities of the former Office for Scientific and Technical Information are best undertaken by the Library, not the Department. This means that in future the Library will be responsible for the grant-in-aid. However, I feel sure that under this new arrangement relations with Aslib will continue to prosper and I send Aslib my best wishes for a second 50 years as fruitful as the first.

From the British Library:
The Chairman and Board of the British Library congratulate Aslib on attaining its Jubilee and send their best wishes for the success of the 48th Annual Conference.

From the Association Belge de Documentation:
Nous vous félicitons pour ce cinquantième Anniversaire. Grâce au dynamisme de vos membres et à la compétence de vos dirigeants vous avez mis en valeur de façon remarquable le rôle de la documentation dans notre société d'aujourdhui. Nous vous souhaitons de poursuivre vos activités avec un succès toujours croissant.

From Dr A. Wysocki, Director of the Division of Scientific and Technological Documentation and Information, Unesco:
I wish to thank you for your kind invitation to attend the celebration of ASLIB's 50th Anniversary.

It is with great pleasure that I would have taken this opportunity to express my gratitude to your Association for its collaboration to our programme, and my hope to see it continue in the future.

Unfortunately, I shall be held at Unesco at that time by several very important meetings and I beg to apologize for not being able to answer your invitation.

I am sure that this celebration will be a great success and I send you all my best wishes for the future of your organization.

From the Centro Nacional de Informacióny Documentación de Chile:
On occasion of Aslib's 50th anniversary, please receive the congratulations and best wishes of our Institution and all other Information Centers and Special Libraries of the Chilean Scientific Information System.

From the Dansk Teknsk Litteraturselskab:
Aslib is heartily congratulated on her 50th Anniversary from her small Danish sister organization Dansk Teknisk Litteraturselskab, which is our national documentation society. We wish you all good luck for the future and hope that you also during the next 50 years will be a source of inspiration to us.

From the Deutsche Gesellschaft für Dokumentation:
I wish to express in writing my best wishes to you for the future of Aslib, and I am sure that your organization will continue to be as effective in its activities as it has been in the past 50 years. For the Anniversary celebrations I wish you the best of success.

An illuminated address from the Finnish Research Library Association, the Finnish Association for Documentation and the Finnish Library Association:
The Finnish Research Library Association, the Finnish Association for Documentation and the Finnish Library Association warmly congratulate Aslib on its 50th anniversary of its foundation in September 1924. We wish Aslib every success in the years to come and we hope that our co-operation will continue as fruitfully as it has been in the past.

From the Arbeitsgemeinschaft der Spezial Bibliotheken of Germany:
To the 50th Anniversary of Aslib the German Special Libraries Association sends warm congratulations. We look with respect on your activities in the various fields of practical and theoretical library work and hope to strengthen our co-operation with Aslib during the next decades.

From the National Center of Scientific and Technological Information of Israel:
Permit me to convey through you to Aslib as a whole our congratulations to the Association on reaching this remarkable milestone. Aslib may be old in years but it has maintained a very youthful spirit. If I would be called upon to name one single organization which embodies the traditions of excellent service with the drive and innovative approach which comes from looking continuously outward, I would choose Aslib without a single moment's hesitation. I am sure that you as Aslib's Director and your colleagues who work with you at Belgrave Square, can be very satisfied indeed with the achievements and the spirit with which you have endowed the organization.

From the Library Association of Jordan:
It is a great pleasure for our Association to celebrate this happy occasion with you. The Board of Jordan Library Association has decided the following:

1—To include an article about Aslib in September issue of Risalat al-Makteba (The Message of the Library) a quarterly periodical published by the Association. The article will be in Arabic, but it will be abstracted into English in the same issue.
2—The Association will invite its members for a talk about Aslib on one of the days fall between 22–28 September 1974.

From the Special Libraries Association of Japan:
The Special Libraries Association of Japan extends its hearty congratulations to Aslib on the occasion of its Jubilee Celebrations. It is a great pleasure and privilege for a delegation of my Association to participate in this auspicious ceremony.

The more we know about Aslib and its energetic work in different aspects of information activities, the greater is our respect for the lofty ideals of the Metallurgical Research Associations who founded Aslib with the noble intention of 'taking all knowledge for the province.'

We special librarians in Japan, groaning under the weight of the flood of information, are inspired by Aslib's brilliant history. Believing that this has been due to the constant support of your members, and the untiring efforts of your staff, we admire and envy Aslib's splendid organization, and wish to follow your precedent.

On this occasion, we are delighted that our delegation will be able to study at first hand the organization and management of Aslib, and also observe the situation of the special libraries of Europe. We wish to discover the source of the enthusiasm of the members of Aslib, and to learn from you of things that will contribute to the promotion of our special library activities in Japan. Your co-operation and assistance to us in this work would be greatly appreciated. In conclusion, I would like once more to honour Aslib's 50 years of history and hope that it will achieve even greater prosperity in the future.

From the Japan Documentation Society:
We celebrate the 50th Anniversary of Aslib's foundation.

From the Institute for Scientific, Technical and Economic Information of Poland, accompanying the gift of an illustrated book on Warsaw:
On the occasion of Aslib's 50th Anniversary with congratulations and best wishes.

From the Swedish Society for Technical Documentation:
On the occasion of the 50th Anniversary of Aslib we have the pleasure to send you and all the members of your society our sincere congratulations and best wishes for further success in your great work within the field of librarianship, information and documentation.

From the Special Libraries Association, USA:
Whereas, the Aslib Jubilee Celebration is observed during the week of 22 September to 27 September, 1974.

Whereas, the first meeting of Aslib in 1924 was reported to have been convened as a result of the 1923 annual meeting of Special Libraries Association in which Mr J. G. Pearce, Metropolitan Vickers Electrical Company, Manchester, had been a participant; and

Whereas, there had been frequent warm, personal contacts at meetings of the two organizations during past years; and

Whereas, Aslib has attained a position of high respect for its professional excellence and as a dynamic and forward-looking organization in the world-wide community of workers in specialized library and information service: therefore

Resolved, That the Special Libraries Association express its congratulations to Aslib on the occasion of the 50th Anniversary of Aslib.

Resolved, That the Special Libraries Association on this memorable anniversary, expresses the hope and desire for renewal of closer contacts with Aslib whose objectives are so akin to our own.

Resolved, That the Special Libraries Association, its board of directors, its members and staff extend to Aslib as a corporate body and to the officers, members and staff of Aslib our heartfelt wishes for continued growth and for ever-increasing success in all activities of our sister organization.

From Dr W. Pirog, formerly director of the CIINTE of Poland and a member of the council of F.I.D.

For 50th Aslib's Anniversary. My hearty congratulations and best wishes.

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National and international publishing in relation to the dissemination of information in all disciplines

Michael H. Black

University Publisher, Cambridge University Press

Paper presented at the 48th Aslib Annual Conference, Churchill College, Cambridge, 22nd–25th September 1974

The situation for publishers and librarians in the 1970s is in sharp contrast with the 1960s. That was a boom decade: with expanding student numbers, new libraries founded, and money available for book purchase. Now inflation goes hand in hand with something very like recession: with insufficient money available in the public sector of book buying to accommodate rising costs. These, in 1974, are rising faster than ever: material costs and overheads are rising at an annual rate of something like 30% at this moment.

These circumstances affect publishing generally, and academic publishing faces a crisis. This can be defined by saying that while the funds available dictate a cutback in new publication, the rise in overhead demands an expansion, otherwise new books will be so expensive that the demand for them will be even further depressed. What we shall see therefore is a complex evolution: some cutting back, some diversification, some expansion. Publishers will change their 'mix'.

These circumstances dictate which of the technological options get taken up. This is no moment for major changes demanding large capital outlay. By and large, therefore, the printed book is safe. But we shall see some modifications in the conventional 'printed' book. We shall also see 'do it yourself' publishing from sponsoring societies wanting to avoid the effect of publishers' overheads on prices of books with small print runs.

THE TITLE SUGGESTED to me for my paper is a very broad one. I thought it would be sensible to make use of the freedom it gives me by surveying in a very general way the current climate in which publishers must operate, and to speculate on the possibility that this climate, being unfavourable, might affect the dissemination of information. The later speakers at this conference will be talking about specific new developments in areas of detailed technical concern. It seemed to me useful for the opening speaker to provide an overall context: to start, as it were, by looking round the horizon in a very sweeping way.

To talk very generally like that is almost certainly to be rather banal. I doubt if what I am going to say will come as any great surprise to a professional audience like this. And if one is going to be a little banal, it would be nice to be able to be cheerful; the most acceptable commonplaces are the ones that make us feel good. I cannot however be enormously cheerful when I look round the horizon at the moment, and you would not believe me if I was. It is important for all of us not to be extravagantly gloomy, and to believe that we are going to get through the next few years, but they are going to be difficult ones.

How different it was ten or fifteen years ago! In retrospect it becomes clear that what we went through from the middle fifties to the late sixties was a boom-time. For librarians and publishers, especially our sort of librarian and publisher, the great age of educational expansion at the higher level was inevitably also a time of expansion for us. New libraries were founded and relatively generously endowed, and the market for books and journals in the academic and scientific fields grew accordingly. The professions which we serve—that is to say the world-wide academic, scientific, and professional body—grew very rapidly, simultaneously providing more readers and more writers. It was not just a matter of numerical growth; one of the exciting features of that time was the growth of new disciplines which needed to be provided with a literature. I think myself in particular of the growth of the social sciences, and of the unifying or bridging disciplines like area studies, and of the explosive growth of certain subjects like linguistics. Those of you more oriented to the sciences will think of parallels.

So two things were going on in that time. In established studies one was faced with a straightforwardly growing market. In new studies one had a new market developing from almost nothing. A very marked feature of the time was the proliferation of journals. I well remember how we at the University Press here added journal after journal to our list, mostly new creations.

Now that was a time, if ever there was one, for technical innovation in the means of disseminating information. I say that simply because that was the time when money was more freely available than it is now. I think we are going to find that it is not really true that necessity is the mother of invention. So far as the kind of necessity we now face is a mother at all, she is the sort of mother who tells you that you have to make do with what you have, only there is going to be rather less of it. 'Invention' therefore will become a matter of ingenuity, of finding ways of making do, of saving here and there. It does lead to some technical innovation, but not of the kind that demands large capital outlays and promises only very long-term results.

We did not—and when I say 'we' I mean publishers—we did not innovate a great deal technically in the fifties and sixties. In retrospect one may say that was a failure of vision; in commonsense terms one would have to reply that there was more than enough to be done simply in keeping up with the growth of the market and discovering ways of meeting its needs in terms of new subjects. It is a straightforward feature of life in such a dynamic situation that you are preoccupied with the short term, and that you only learn how to cope with what has just happened. What happens next always turns out to be something slightly different, and you are lucky if you adapt in time.

As a specific example of that process I think of the new subjects entered in the mid-sixties. Publishers inevitably work by a mixture of hunch and precedent. Where there *are* no precedents it's nearly all hunch. When we published our first books in certain subjects, we looked at each other and said, 'how many copies can we sell?' The honest answer was 'We don't know. Try 3000' (or some such number). After a certain number of shots of that kind, you are able to watch the results and see a pattern beginning to emerge. You learn that even within a single subject one kind of book will do better, for deducible reasons, than another.

We were just beginning to feel *some* certainty about these matters when the market changed. In about 1969 you could look back at books published in the early 1960s, and see a sales pattern which, because it extended over several years, and followed the fortunes of a number of books, began to have a comprehensible shape. So in 1969 or 1970 you fixed your print-number on the basis of a reasonable expectation. But it turned out to be a false one. It was at *that* moment that the market for academic and scientific books turned downwards. We now face a situation in which we are as uncertain as we were in the early sixties, but for the opposite reason. The market, which was then expanding, is now contracting. This is as true of the international market as it is of the local market.

The reason for this we all know, and we put it in the one word 'inflation'. The one word, of course, is an oversimplification. There was a mild form of inflation all the way through the boom, and the market began to turn downwards long before inflation reached its present rate. Publishers with an international operation are likely to date their difficulties from the time during the Vietnam war when Federal funds were diverted away from libraries in the USA. The American university library market was certainly the largest single component of the world market for academic books and journals. This was the first cold wind we faced after the boom, and since then there has been a steady downturn in the market for academic books.

Academic publishers of books and journals have been peculiarly dependent on you, the librarians; for the books we produce are, if not entirely, at least in very considerable measure *not* books that the individual buys on impulse in a shop and reads for pleasure. They are very largely books to be referred to. The academic or the scientist wants access to them, but he does not want to buy them unless they are so central to his own concerns that he must have them by him for constant use.

Imagine therefore this situation. Until now, English academic books, by world standards (an important qualification), have been cheap, perhaps still are cheap. They are cheap because they have been supported by a world library sale which until recently was reasonably steady. English academics and scientists are by world standards not well paid; none the less English books because of the world library market remained in the sixties well within the purchasing power of those academics when they decided that they wanted a personal copy of a particular book. If you enter a situation, as we did at the end of the 1960s, where libraries find their funds in real terms not expanding, or even contracting; if publishers at the same time find their costs rising very rapidly, then you enter a critical situation, such as we are now in.

In this year, 1974, English publishers, like every other business concern, face the sharpest rises in cost in living memory. It is not just that raw material costs, like paper, are going up phenomenally fast: other costs like rent, rates, postage, heating, travel, employers' contributions to social service benefits, are currently going up at much the same rate. In short, inescapable overheads are rising fast at a moment when sales are dropping. I hardly need to tell you all this, since you face exactly the same situation, though in your case I take it that your funds, which come not from trading but from central sources, are more rigidly controlled than a trading company's. But the gulf that seems to face us all is the one between a shrinking money supply and rising expenditure, so that the actual *function* we all serve—in your case to receive and store books and journals, and in my case to produce them—is actually threatened with diminution. For in both cases the apparently simple answer to an inflationary situation is to say 'let's do less'.

That isn't, however, an easy option for publishers. Given that we now seem likely to sell fewer copies of every book we publish, given that costs are rising, we are already in a situation where prices must inevitably rise further. If you attempt to spread your fixed costs over even fewer titles than before, then the price-rise threatens to be so dramatic that the market might actually collapse.

I can however imagine two cases where publishers might decide to produce fewer titles.

The first is straightforward financial pressure, for instance by banks, on firms which are in liquidity troubles. One of the odd features of the present situation is that it is much more important for a firm to have cash in hand than to have made a good profit last year. Indeed, to make a large profit is in some circumstances harmful, for, in the United Kingdom, in the following year half the profit goes in corporation tax and at that moment your cash situation dramatically deteriorates. It is of course the moment at which you are paying for next year's production at next year's costs, and last year's profit is already eroded by inflation. Because money is losing its value, the cost of borrowing it has to be high, and banks are becoming increasingly reluctant to lend; it is therefore important to hold your own cash, even *though* it is losing value. Cash management, that is to say balancing your inflow against your outgoings, is currently the key to survival. If you face a cash crisis of sufficient magnitude, you may have to reduce your rate of production, and possibly fire staff, simply because you cannot pay for them. But these are crisis measures; to continue trading at a lower rate is never a recipe for success or even survival, and least of all in an inflationary situation. Some publishers may find themselves doing it, however, hoping that it is a temporary measure; just as some will find themselves going bankrupt. It is merely realistic to say that the bankruptcy of some firms would slightly relieve the pressure on others, by reducing the number of titles published. For, given that there was in the 1960s a good deal of overpublishing, and a fair amount of it was in academic publishing, it would in one way alleviate the global situation if fewer books were published and some journals ceased to appear. Certainly librarians would find it easier to keep up.

So much for the first case. The second case might arise where a publisher rightly judges that the overall market for his kind of book, his total product, is finite, and in present circumstances constant or shrinking. The more titles he produces, the fewer he will sell of each. It is important that the converse be also true: that the fewer titles he produces the more he will sell of each. That *is* sometimes true: I think it is particularly true of some general publishing, and especially the publishing of impulse-sale books like paperbacks, bought out of discretionary income. Though it is certain that in the UK discretionary income is going to go down in real terms, it is not certain that less of it may be spent on books. If people don't go away on holiday, they may read more. But it would be a reasonable strategic move, if you were the head of Penguin Books, to reduce the number of titles and aim all the same to sell more of each. And that has just happened: that is to say, a decision of that kind was recently made. In so far as Penguin supply mass-market paperbacks through general outlets, it was probably a correct decision. In so far as Penguin are academic publishers, it may conceivably have been wrong.

But that situation does not apply exactly to our kind of book, the 'straight' academic book, where the publisher cannot spread his rising overhead over fewer titles, if they are not going to sell more copies. The dynamic here is going to be very complex indeed. Publishers are undoubtedly going to revise their strategies, and they may decide to leave this or that area of publishing, but it will usually be in order to enter another or to expand in a third.

Almost the only thing one can say with certainty is that new journals are in current circumstances very unlikely to be founded, for reasons I do not need to tell you. I cannot believe that a certain number of marginally useful journals will not founder. But again, the rate of proliferation in the 1960s was fairly reckless, and a period of stringency will be salutary; and once again, the disappearance of some will relieve the pressure on the rest.

Another thing which seems to me fairly certain is that paperback publishing is likely to increase. Given what I have just said about the decision at Penguins, may seem inconsistent, but I am thinking in particular of the high-price academic paperback. The general point I am making is that we now face in all sorts of areas opposing economic forces of almost equal strength. One demands that you *increase* your output in order to increase the volume of your return in order to pay your increasing costs. The other demands that you *reduce* your output because the market itself is growing at a negligible rate or actually declining, and if you overproduce you will not sell your goods, and so you will not pay your costs anyway. The actual reconciliation of these forces is going to be too complex to predict in detail. There will however be fairly drastic results here and there.

It might be said that it is precisely in times like these that a major technological change in methods of production would be the natural way of resolving these dilemmas. I have hinted that I do not think this is likely for the very simple reason that now, less than ever, has anyone the capital available for the kind of investment that would be needed for any major change. I cannot easily imagine the capital being raised on the market; I cannot see banks lending it; I certainly cannot see publishers and printers having it to spare, for risk-taking purposes. We have too much invested in books and journals already going to libraries of the conventional kind, in conventional printing machinery, in conventional marketing methods. That is all simply too massive and ongoing to be radically changed at a time when people barely have enough money to keep things as they are, when they need to get the last pennyworth out of their present plant.

One might indeed envisage a sort of apocalypse. Suppose a collapse of the market such that publishers find that thereafter they can produce books only in absolutely minimal print-runs at prices hitherto unimaginable. We should then have a situation in which the publisher is producing a small number of 'masters' which then require a technology by which the 'masters', or parts of them, are duplicated on demand and further disseminated. Such a technology exists, from the xerox machine to microfiche. I can only say, though, that the day when no individual of ordinary means can buy his own 'masters' is one I hope not to see.

And frankly, I do not think it will happen. It is my belief that the individual copy of the printed book will go on being a thing that individual readers will manage to go on buying, and even collecting something like the individual scholar's library. The books may not, however, all look exactly as they have done in the past. We shall see more paperbacks at what would in the past have seemed high prices. We shall see more typewriter setting, we may even see calligraphy reproduced, especially in areas like Oriental studies, or other fields which require complex notation.

To come down to the level of humble practicality, one result of present circumstances is going to be a marked improvement in authors' typescripts. More and more, publishers are going to insist on having from some of their authors 'camera-ready' copy. Where the prudently foreseeable sale of a specialized book drops below a certain number, it can only be by the photolithography of a good typescript that these books can be called publishable propositions. It is important here to make one thing clear: production of books by these methods is *not* going to make them cheap, and is no longer to be considered as a device which spares the purchaser's pocket—if it ever *was* that. Books produced in this way will be printed in such small numbers that they would in the ordinary way be unpublishable or would at any rate be abnormally expensive: publishers may, however, be able to market them at about the same price as books produced in larger numbers, or they may be more expensive even in their simpler form.

It is also inevitable that some books which were publishable in an expanding market cannot be rescued even by means of these simpler production methods. It does not follow that they will not be published at all. We shall see a revival of 'do it yourself' publishing by learned societies, and indeed by libraries and specialist bodies such as are represented here in this Association.

From one point of view a publisher is a device for putting books on the market at something between three and five times the production cost. The reason for the multiplication is the bookseller's discount, the author's royalty, the publisher's own overheads, the publisher's hoped-for trading surplus. A learned society may decide to market a book, perhaps using one of the simplified production processes now available. It may have a paid staff that can be given this additional function, and it may choose to ignore the cost since it is paying their salaries anyway. It may use the unpaid labour of its members and honorary officials. It may pay the author no royalty. If it publishes primarily for its members it can reach them by post without the intervention of publisher or booksellers. It can therefore charge a price far lower than a publisher would, and it can function on very low print-numbers simply because it is not primarily a trading body, and does not need to show a profit on that particular activity. I am sure we shall see this happening, and as a publisher I can only say that I wish all such ventures well, because they solve an otherwise insoluble problem.

It is by a complex evolution in the directions I have sketched in here that the present situation is surely going to be met. Difficult as things are going to be, I have enough confidence in the ingenuity of the publishing profession to say that I do not think the dissemination of information in scientific and academic disciplines is fundamentally at risk. It will on the whole be harder to get published; but what that primarily means is that standards of quality in books and journal articles are likely to rise. That in itself is a good thing. Although there are odd features of the present situation which represent the readoption of the methods of earlier times, I do not think that we should therefore feel that we are lapsing back through time in a kind of reversal of the last hundred years. Times are going to be hard for us all, but I do not think—at this moment, anyway—that we face a catastrophic situation. I hope for instance that at your next conference an opening speaker, while he may still be rather gloomy, will still be able to look forward with sober confidence towards a better time.

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The primary scientific literature in the next few years

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Paper presented at the 48th Aslib Annual Conference, Churchill College, Cambridge, 22nd–25th September 1973

After some 300 years during which the primary research literature kept step with the demands made on it there is now growing awareness that changes will need to be made in order that the primary information system continues to fulfil its several functions and that adequate and economic relations are forged with secondary information services.

The problems that now confront the research journals arise from the inflexibility and expense of the traditional publishing process compared with the need for infinite capability for selection from the resulting package we call a journal. Research is being conducted here and abroad to determine the methods of overcoming these problems.

Primarily, this research follows two lines, the first to determine the desirable physical or reprographic form of the journal, and the second to establish the essential information content of the research paper and the most efficient and economic method of presenting that information.

Finally, a forward view will be attempted of the new primary journal, of its place in the information system, and of its economics.

NO SCIENTIST HAS ever been entirely satisfied with the scientific literature, and indeed, in early scientific records, the written word was not even intended as a vehicle of communication, but as a means to hide discovery from inquisitive eyes and to imply the scholarship of the author.

Many, I am sure, feel this is still true. From then till now, it may be claimed, the written word in science has been used irrationally and packaged illogically. If our communication systems are not to collapse completely we will have to make substantial but adequately organized changes (and I emphasize organized).

In this paper I will not try to tell you firmly what will happen, for none of us is yet sure, but I hope to indicate why changes will occur and what we think some of them will be.

Initially, 'development' of primary literature was centred around the development of the Learned Societies themselves, and from the first journals of original research (*The Philosophical Transactions of the Royal Society*, London, 1665, and *Journal des Scavans*, Paris, 1665) until the mid-19th century Journals were ARCHIVAL in character, placing on record details of work that had been reported VERBALLY and discussed at length at actual meetings of the Societies.

Also, lengthy correspondences were carried out between Societies on scientific matters. It was this correspondence system that led to the next change, for although the Journals remained ARCHIVAL for their own research papers, the correspondence at Society-level led to the concept of ABSTRACTS, and, for example, in 1853 the then Editor to the Chemical Society was instructed to prepare (and include in his journal) 'Accounts of the contents of the papers reported in the foreign journals of chemistry.' Here then we see the beginnings of an ABSTRACTING SERVICE produced for CURRENT AWARENESS OR ALERTING PURPOSES.

During the next hundred years development of Journals was steady, uninspired, brought about largely by the growth of chemical science, and motivated by a change in status of the scientist, from amateur to professional, rather than by any writings or discussions on the theory, practice or development of information flow.

In their function as primary sources of information the journals slowly changed purpose rather than character in that same period. The science population had grown but a smaller proportion of the total made their contact with scientific discovery through attending scientific meetings. Scientists relied more and more on the journals rather than on meetings for their information. So, without intentional change Primary Journals (*i.e.* the research papers element) added a CURRENT AWARENESS or ALERTING function to their existing ARCHIVAL service. This change was attenuated by build-up of a backlog of ABSTRACTS during the 1940–1950s and early 1960s. So the abstracts services no longer provided an acceptable current awareness function.

Previously, Research Journals had acquired their eminence by matching the needs of the scientist engaged in an intellectual enquiry, whether in an academic or an industrial environment. Today they attempt to serve him in two ways—ALERTING and ARCHIVAL, and do both badly. There is, however, little evidence that the scientist has changed or that his needs will change.

Primarily it is the user who has changed. Modern technology has, now, associated with it a large body of people whose interest is the application of the results that *arise from intellectual enquiry,* not the fundamental enquiry itself. These people have little need for the fundamental background or results, but this must not damage the generation or flow of those results or the interests of everyone will suffer.

I suggest that, in both facets of his involvement with information—as a creator and as a user—the scientist has need for a continuing detailed primary literature.

Furthermore, the main abstracting organizations in physical sciences have clearly indicated their intended future dependence on research Journals and are organizing themselves to give complete indexing and retrieval systems to the worlds primary SOURCES of information rather than to the information itself. This, rather than the abbreviation of the primary literature, is their proper role. The primary literature must clearly facilitate such interaction and be seen as one of a set of partners in information transfer.

If my case is sound, then there is a continuing need for some form of primary literature designed to give a scientist two basic SERVICES: (a) the ability to study what is already known (ARCHIVAL); (b) to inform him quickly as to what is newly discovered both in considerable detail in his chosen area of study and, perhaps in general terms only, within the total discipline of his science—in this case chemistry (AWARENESS OR ALERTING SERVICES).

Acceptance of this view does *not*, however, mean that there can or should be no change. Indeed the converse is true: changes must occur in order that the needs can be met efficiently and quickly.

The steady increase in the amount of new information to be processed has brought other problems which the lack of physical flexibility in the present reprographic system of packaging cannot readily overcome. By packaging I mean the putting together of the elements of new information that arise from a research study into what we currently call the research paper (the sub-package) and the collation and reproduction of these research papers as bound journals (the package).

The reciprocally-related problems which the inflexibility of the existing system cannot deal with adequately are those of DISPERSION and DILUTION. If I take my own subject as an illustration I would point out that in 1973 some 350,000 chemical research sub-packages (equivalent in total length to about 30,000 paperbacks) are dispersed among some 12,000 packages—a yield of about 20 sub-packages per package per year.

Clearly, the average individual scientist lacking a substantial information support group or wishing to control his own acquisition of knowledge is faced with three impossible situations:

(a) the fraction of the annual increase in new scientific information (*i.e.* 350,000 sub-packages) that he can take cognizance of is very small indeed, even for information in core journals.

(b) In any given area of speciality the sub-packages tend to be *dispersed* over a large number of packages: for a specialized area of chemistry this may be some 200 packages; for a wider, more general field, probably some 500 are involved.

(c) In the packages he should consult to be able to study those sub-packages, they will be diluted with many other sub-packages of no interest to him: again, for a very specialized area, some 4,000; for a general area, perhaps 10,000.

What then will he do about consulting some 200–500 packages and thumbing through some 4,000–1,000 sub-packages. In fact, he will consult 5–10 packages at the centre of his speciality and rely on his rough expansion of brief information from abstracts or a retrieval service to control his further acquisition of knowledge. A rather inefficient approach that we are all very familiar with.

The user's needs may therefore be refined in that he is seen to want not so much the kind of dual-purpose literature service that has been provided in the past but a more personalized two-level service, one level covering only areas in which he is deeply involved (probably for research purposes) and the other those areas in which he needs general but connected coverage (for his own educational and perhaps teaching or research management purposes). He will also want these as cheaply as possible, in concentrated packages, not diluted with material extraneous to his needs.

I believe these needs can best be met by extricating ourselves from the rigid packaging situation (*i.e.* the inflexible, printed journal) that we have built up over the past century. Also we must develop a proper understanding of what others need to know when we write papers, and in what form that knowledge is best presented—not, as in the past, believe that the author always knows best.

Modern developments in reprographic and recording techniques can offer help in increasing flexibility and lowering costs. Greater international co-operation, in place of insistence on national prestige, can, by rationalizing the packaging of information, reduce dispersion and dilution and the better understanding of the reader's needs can increase the efficiency of use of the literature and reduce the demands on the user's time.

As a move in this direction a new-look primary research package has been designed under the name of the *European Chemical Reports*; several parts are being tested, and the basic educational work started that will hopefully allow implementation and acceptance, ultimately on an international basis.

The new package would be a two-part system, with the two parts completely inter-related and immediately relatable to secondary services. The full author's text of a paper, in the form of an author's complete but refereed typescript would appear as microform (film or fiche). A synopsis, equivalent to some 300–500 words and based on keywords selected from a controlled vocabulary together with displayed material such as formulae, equations, graphs and reaction schemes, would also be prepared but because of their standard physical design, these synopses can be packaged to form a range of mini-journals, each covering a specific area of specialization. The full control of their content and the detailed cross-referencing will facilitate better and cheaper interaction from secondary (indexing) services.

This new approach could serve both archival and current alerting functions of present primary publications well. It would provide the individual with *brief awareness material* (the Synopsis Journal) at low cost coupled with a *back-up provision of greater detail* (from the microform version) on any specified individual item and on that item *only*. It would provide the archival function in modern archival form.

Yet it makes use only of well-tried techniques of information dissemination without involving any *utopian* element. In fact all of its steps are already practised to a large extent by libraries and scientists, although in an independent and unrelated fashion. It is the combination of these steps into an integrated flow scheme that is new and therefore perhaps unacceptable to many.

The microform has long been associated with scientific publications; indeed most chemical journals are already available in microfilm edition but this is at present made, as an artefact, from the *printed* publication and its availability restricted to purchasers of the printed form of the *Journal* and to post-publication of the latter. It has been in fact used purely for library-deposition purposes.

The relation between the synopsis and the microform full account is now being studied, in a German periodical in the chemical technology field, because of the reputed unpopularity of microforms.

At the present time Journals are author-oriented, rather than designed for the information users. By this I mean that no control is placed on what the author includes in his paper or how he says it, other than the referee's requirement that the account of the research is convincing scientifically.

Indeed it is only within the last 2–3 decades that the detective-story approach, of not revealing the nature of the discovery until the last paragraph of the paper, died out.

Yet there is ample evidence that the present type of paper is very seldom read in full, that where schemes exist for the deposition of much of the detail originally contained in a paper, that detail is seldom recalled from deposition, and that when opportunities arise for preliminary communication of the results of a research in a 'letter to the editor' or similar short form that preliminary communication is often not followed by publication by the authors of the full definitive paper, nor is there, apparently much public demand for the further details.

These factors again suggest that the 'synopsis journal' will satisfy the major requirement of many chemists; they also suggest that we should attempt to optimize the content of the synopsis.

We have therefore instituted a research programme to identify the elements of information needed to be transferred from creator to user, to assess their relative importance, and to determine how to present each most efficiently and economically in terms of users' time.

Our early qualitative conclusions are that straight essay prose is very inefficient and uneconomic for scientific purposes—leading us to suggest that, in the new primary literature, substantial changes in presentation will accompany the changes in packaging methods and physical reproduction that seem inevitable innovations during the next few years.

The integrated publication system: a new concept in primary publication

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Paper presented at the 48th Aslib Annual Conference, Churchill College, Cambridge, 22nd–25th September 1974

Conventional means of producing primary journals involve a number of problems, two of the most serious of which are publication delays and fragmentation of the literature into more and more specialized journals. Secondary publications are at best a palliative in this situation; significant advances can come only from a rethinking of the basic structure of the primary literature.

An alternative to the conventional journal is the integrated publication system, in which original papers over a wide field can be accepted by a single agency, classified, and disseminated in a variety of forms to meet specialist needs. Such a system is the International Research Communications System, IRCS, which exists to publish short research communications in the biomedical field. Communications accepted for publication are made available to subscribers in a variety of forms, including a series of specialist journals, a selective general-interest journal, a classified list of titles and a complete edition on microfilm.

The advantages and disadvantages of such a system to authors and readers will be discussed, and its implications on the whole information-transfer process considered.

THE IMMINENT DEMISE of the primary journal has been predicted at regular intervals for the past twenty years or more, yet it is still with us. As long as scientists continue to generate new information, and as long as their professional standing rests on the body of knowledge they have created, there will be a continuing need for a medium to record such knowledge and disseminate it to the author's peers; the primary literature is clearly still fulfilling this role at present. There is, however, a widespread feeling that new approaches are needed if the primary literature is to *continue* to be used as the medium of choice for the exchange of new scientific information. Both authors and readers of the primary scientific literature are beset with problems in its use: two of the most obvious of these are *delays* in publication, and *fragmentation* of the literature into ever more specialized journals.

The delay between submission of a manuscript to a scientific journal and its appearance in print can vary from about one month to two years or more, depending on the journal, but is frequently several months. Many factors contribute to such delays, one of the most frustrating being that most journals are severely limited in size, and are faced with the alternatives of turning away large numbers of otherwise perfectly acceptable papers on grounds of lack of space, or building up a steadily-growing backlog of papers awaiting publication. In either case, the author suffers because his work cannot be placed on record until long after it is completed, and the reader suffers because results, ideas or methods of direct relevance to his own work have reached him much later than they need have done. It is hardly surprising, then, that many scientists communicate their results to colleagues whose interest in the subject they already know *before* formal publication, either directly, through conferences, or via preprint exchange networks. The enormous popularity at their height, of the now-defunct Information Exchange Groups based on the National Institutes of Health in the USA[1] indicated the substantial need among practising research scientists for the rapid dissemination of research results, as well as the strength of feeling that the conventional primary literature was not meeting that need adequately. Even now, research journals are in the position of having to take second place as an alerting medium to less formal channels of communication—including the popular press on occasion.

Fragmentation of the literature into more and more specialized journals, whether by the fission of existing journals or by the creation of new ones, is a natural response to the problems of an expanding literature. Yet it too brings problems. Even when highly specialist journals covering a narrow field, such as diabetes research, exist, they seldom contain *all* the significant research relevant to the field, as a glance at their citation patterns will show. Readers of the literature in such fields are thus faced with an increasingly large number of journals to scan; the problems of *dispersion* and *dilution* referred to earlier.[2] An author's choice of journal will depend on a multitude of factors (including prestige of journal, likelihood of acceptance, publication time-lag, and coverage by secondary services),[3] and it can hardly be claimed that it is always rational. Other things being equal, an author may simply choose the communication channel most readily available to him: an itinerant author might well publish the first of a series of papers in the *Journal of Endocrinology*, the second in the *East African Medical Journal*, the third in the *Medical Journal of Australia*, and the fourth in the *American Journal of Physiology*, as he travels around the world, posing considerable problems for the reader who wishes to follow his work in the literature. True, such problems can be overcome, at the price of a considerable time-lag, by secondary publications such as *Index Medicus* or *Science Citation Index*. But need such problems exist in the first place? Is the strength of our dependence on secondary publications perhaps a measure of the failure of the primary literature to provide an efficient means for communicating research results?

Fragmentation brings problems for authors as well as readers, though authors' sufferings are perhaps less well publicized. Given an ever-increasing number of general, specialist and local journals, whose scope and editorial policy are not always easy to ascertain, authors may be faced with considerable problems in deciding where to submit their work, if it is to have the best chance of reaching the desired audience. This may be a minor problem for an established research worker in a tightly-knit discipline well-served by journals, but can be crucial for the first-time author or the true innovator, who addresses himself to problems outside the realm of established disciplines, and who may therefore find that his work falls outside the scope of established journals; he consequently finds it almost impossible to publish. The penalty for choosing the 'wrong' journal for one's paper is the often considerable delay before the paper is rejected. The paper then has to be hawked round from journal to journal, becoming more and more out of date in the process, until a sympathetic editor can be found and the paper published. A classic example of this kind of phenomenon has been described recently by Shephard.[4] An article describing the successful use of a little-known drug in a case of poisoning by *Amanita verna* mushrooms was for various reasons rejected in turn by four major American medical journals, before eventually being accepted (in its original form, incidentally) by the author's state medical journal. Between them, these four rejections contributed seven months to the delay in publication of the article, which eventually appeared in print twenty-one months after the original poisoning episode. Long before then, however, news of the case and its treatment had been communicated to physicians throughout North America, through the columns of the *New York Times* and other daily newspapers. While many lessons can be drawn from this episode (which is by no means an isolated example), one conclusion is clear: the primary literature, in biomedicine at least, can on occasion fail miserably to meet the needs of its users. Failures such as these cannot be alleviated by secondary publication; they are inherent in the structure of the primary literature itself, and can only be prevented by a restructuring of the primary literature on more rational lines.

A more rationally-planned scientific literature would perhaps be one in which manuscripts from any part of the world could be sent to a single editorial centre (or perhaps a group of co-operating editorial centres with clearly-defined areas of responsibility) which would then direct them towards the most suitable journal for publication. Such a centre would aim to promote readily-identifiable and wherever possible uniform editorial standards in the journals with which it was associated. It could also encourage experiments in new forms of primary publication: for example, separate article distribution,[5] 'repackaging' of journals for individuals or small groups of research workers,[6] and publication of extended abstracts instead of full-length articles.[5] A pointer towards such a future is the International Research Communications System (IRCS), which is the first fully-operational example of an ***integrated publication system*** in which a single input can generate a variety of different outputs. Papers from a broad field (in the case of IRCS the whole of biomedicine) are submitted to a single editorial office, and, provided they survive scrutiny by editors and referees, published in a variety of alternative forms to suit the differing needs of users; articles are available as individual reprints, or packaged into one or more specialist or general-interest journals according to subject-matter and importance. At present, IRCS publishes only one type of paper, the short research communication limited in length to a single printed page (they hope shortly to introduce a scheme for depositing additional data on microfilm). Communications submitted to the IRCS editorial office are first considered for acceptance into the System as a whole; accepted communications are assigned a unique reference number (which also serves as a page number), are typeset and printed as separates (providing authors' reprints and offprints to be held against requests from subscribers). At the end of each month, each specialist journal is in turn compiled by selecting from the complete sequence of accepted papers all which are judged to be relevant to its particular field. Provision is made for a paper to appear in more than one specialist journal where necessary (a paper on the effects of a drug on the heart would, for example, appear in both the pharmacology and cardiovascular system journals); the average paper appears in three specialist journals. A classified list of the titles of all communications accepted for publication during the month is compiled, titles being listed under broad subject headings, each of which corresponds to an IRCS specialist journal. A selection is also made of the most widely interesting communications for publication in the IRCS *Journal of International Research Communications*, which corresponds to a general biomedical journal. Finally, the entire sequence is microfilmed, to form the IRCS *Library Compendium*. Thus over thirty different 'journals' representing different selections of material from the same source are produced simultaneously.

The advantages of such a system are its speed, flexibility, and predictability. An author can submit a paper reporting original research results in any area of biomedicine to IRCS in the knowledge that it will be accepted or rejected purely on grounds of scientific merit; it will not be turned away because of lack of space or because it does not fall neatly within the scope of one or other specialist journal. A reader can select the output from the system which best suits his needs, in the knowledge that all papers relevant to his interests are coming his way, with the amount of irrelevant material kept to a minimum. Papers of relevance to more than one discipline can be simultaneously brought to the attention of readers in each of these disciplines through the appropriate specialist journals. New journals can be added to the system at any time to meet the needs of particular groups of subscribers, without in any way affecting the scope of existing journals within the system, because each paper may appear in as many journals as necessary. 'Repackaging' of articles into highly specialized journals serving the interests of small groups of specialists—seen by Swanson[6] as one of the functions of the information centre of the future—becomes a real economic possibility within such a system. Subscribers do not necessarily have to receive 'journals' at all: individual document dissemination services of the type pioneered by the American Institute of Aeronautics and Astronautics,[5] where separate reprints of all articles falling within specified subject areas are automatically forwarded to subscribers, can readily be operated alongside regular journal production. This kind of service should be particularly suitable for research areas which become fashionable for a few years, and then cease to attract further attention, as it should reduce the temptation to start up new journals which will cease to serve a useful purpose after a relatively short time.

The disadvantages of an integrated publication system as such are very few. Clearly, 'journals' which are outputs from such a system lack the variety and individuality of the specialist journal of the present; uniformity is the price one has to pay for a more unified primary literature. And one cannot help feeling that a more unified approach to the presentation of scientific information in the literature would aid the communication process immensely. Too much of the variety between journals is idiosyncrasy for its own sake.

While accepting that, as a utopian ideal, an integrated publication system may have a great deal to recommend it, one can still make valid criticisms of organizations such as IRCS, who seek unilaterally to introduce a system of this kind, when one might expect that the best way to achieve integration of the primary literature would be through the co-operation of existing journal publishers. It can be claimed that IRCS is in fact adding to the proliferation of journals and thereby, in the short term, making communication of scientific information more difficult. However, if one looks to the future, sheer economics of journal publishing will be a spur to integration, as this may well be the only way in which a publisher can continue to offer a large range of specialist journals without production costs rising to a crippling level; the value of IRCS in this context could well be its ability to demonstrate that such a system *is* workable, and to set a lead which other publishers may follow. It is of interest that at least one large publisher, the American Institute of Physics, is already thinking about the possibility of integrating its range of journals along lines similar to those described here, and indeed, of taking the principle of integration one stage further, to include their secondary publications.[7] The possibility of simultaneously generating the bulk of the primary and secondary literature as alternative outputs from a single source is an intriguing one, as it carries the implication that in the future, the distinction between primary and secondary publications could become blurred to the extent that it becomes purely one of marketing.[7]

For the present, IRCS journals will naturally be judged by the same standards as other biomedical journals; their level of readership and contributions will be the index of their usefulness as a part of the whole biomedical communications network. Whatever the eventual place IRCS itself occupies in this network, the concept of integration which it has pioneered is one which I am convinced will play an essential part in the primary literature of the future.

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Microfiche preprints for conferences

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A possibly novel application for microfiche is its use as the primary publication form for conference preprints. This concept is discussed with particular reference to its application at the *Rotary-wing aircraft symposium* organized by the Institution of Engineers, Australia and Royal Aeronautical Society and held in Melbourne, Australia, 24th September 1973.

A questionnaire seeking to ascertain user reaction to the microfiche preprints was circulated to 119 people who attended the symposium and/or received copies of the preprints. The responses to this questionnaire have been analysed and user acceptability of microfiche preprints of postprints has been investigated in relation to timeliness, accessibility of a microfiche reader/printer, prior awareness and use of microfiche, cost, and the effect of form on preprint reading habits.

MICROFICHE WAS USED as the primary publication form for the preprints of papers presented at the *Rotary-wing aircraft symposium* held in Melbourne, Australia, 24th September 1973. This symposium was organized by the Victoria Division of the Institution of Engineers, Australia (I.E.Aust.), and the Melbourne Branch of the Royal Aeronautical Society.

The *Rotary-wing aircraft symposium* was held in conjunction with a Commonwealth Advisory Aeronautical Research Council (C.A.A.R.C.) meeting, which was attended by delegates from Canada, India, New Zealand, the United Kingdom and Australia. People with an interest in rotary-wing aircraft, including research scientists, academic staff and senior defence and civil aeronautics personnel attended the symposium. Thus user reaction to the microfiche preprints has come from a wide range of individuals: from operators, manufacturers, designers, regulating authorities and scientists engaged in aeronautical research and development. It is considered that there is considerable significance in their reactions to microfiche preprints, and to their awareness of microfiche.

The symposium management committee were persuaded that the use of microfiche for preprints had potential advantages over conventional hard copy preprints. These advantages were seen to be, primarily, the cost of and time required for publication. The expenditure for a 1972 I.E.Aust. conference had been $1,116 for 303 copies of 140-page preprints and entailed the distribution of special format paper and detailed typing instructions. If, however, 105 mm × 148 mm microfiche with a reduction ratio of 24:1 had been used, the 140-page preprints would have required 2 fiche, and the total cost would have been $131.20 (at $5 for each master fiche, and 20 cents for each diazo copy). That is, the microfiche would have cost 12 per cent of what was actually spent on hard copy preprints.

The Institution of Engineers, Australia, normally allows six weeks for printing hard copy whereas one week only is needed for microfiche. These extra five weeks can be quite important to authors preparing a paper, or finishing experimental work on which the paper is to be based.

Another substantial advantage of microfiche preprints is that copies required subsequent to those initially produced and known to be required can be made quickly and inexpensively on demand. This eliminates problems of storage and possible wastage of preprints published in excess of requirements. Binding or stapling is eliminated. Savings in postage costs can also be effected; this is particularly so if preprints are to be sent overseas by airmail. Thus the processes of reprography, collation and distribution of preprints are greatly facilitated.

I believe that the use of microfiche as the primary publication form for preprints is a novel application for microfiche. Certainly it is so far as the Institution of Engineers, Australia, is concerned. In any case, unique or not, special requirements were involved in the publication of preprints for the symposium. The eye-readable heading is as follows:

I.E.Aust		ROTARY-WING AIRCRAFT SYMPOSIUM,
R.Ae.S.	1 of 2	MELBOURNE. 24 Sept. 1973.
1973		Institution of Engineers, Australia and
		Royal Aeronautical Society. Preprints.

What may be called 'contents' is produced in two frames and consists of the programme and summaries of papers, together with a table showing the position of papers on microfiche. The table lists authors in alphabetical order, microfiche number (there are two), and identifies, by frame number within each alphabetically designated row, the position on the microfiche of the first and last page of each paper.

The papers are ordered so that all papers are complete on one fiche or the other. The last five frames on the first fiche are empty, and are preceded by the eye-readable statement, 'continued on fiche 2 of 2'. Unfortunately, the second fiche does not have a similar eye-readable heading, as this would have entailed using three fiche; instead,

I EA
2 of 2
0001

is above the National Bureau of Standards resolution chart on the first frame to make an eye-readable link between the first and second fiche. However, the first frame of each paper gives bibliographic details of the symposium, and author, title and abstract for that paper, ensuring that the second fiche can always be identified.

Due to the late arrival of papers and need for last-minute corrections, the microfilming of the preprints commenced only one and a half working days before the symposium, and so it was not possible to send preprints by post to the symposium delegates.

On registration, delegates were handed one set of the microfiche preprints, plus a hard copy of the Programme and summaries of papers, which included the position of papers on microfiche. This hard copy, printed on both sides, was produced on a Rank Xerox 4000 from an original from which the microfiche was filmed. One reader printer (by courtesy of Hawker-Siddeley), a Rank Xerox 4000 (by courtesy of Rank Xerox), and three microfiche readers were provided at the symposium venue, as well as staff to instruct delegates in the use of the equipment, and to demonstrate the advantages of microfiche.

In this way, delegates who wished to do so could readily identify and read any paper of particular interest, either in microfiche or hard copy form.

Interest in the microfiche, as expressed at the symposium, varied from an enthusiastic, 'Oh yes, I've used microfiche . . .' and 'How can I read it?' to no apparent reaction. As expected, many people arriving at the symposium were more interested in talking to colleagues than reading preprints just before the symposium was due to begin.

In an attempt to gauge user reaction to the microfiche preprints rather more precisely, a questionnaire was circulated (Appendix 1) to 119 people who attended the symposium and/or received copies of the preprints. The letter attached to the questionnaire stated, in part, 'The decision to use the microfiche form for preprints for this symposium was conditioned by the choice between timely, moderately-priced microfiche preprints and rather more expensive hard (paper) copy postprints', and, 'Your reaction to this new procedure is of considerable interest from the point of view of information dissemination, and will be of value to conference organisers'.

In the discussion of the analysis of data derived from the returned questionnaires, and design of the questionnaires, I wish to acknowledge the very considerable assistance in this regard given to me by Mr Alan Ross.*

Ninety of the 119 questionnaires were returned; 74 from delegates and 16 others. In some of these, questions had not been answered; this made analysis more difficult. The numbers responding with yes/no are given on the questionnaire (Appendix 1).

Questions 1, 2 and 15 were of a documentary nature, having little or no relationship to the acceptability of microfiche. Of the 90 respondents only one had not availed himself of the opportunity of obtaining a microfiche copy of preprints. 71 were generally sponsored, 11 generally self-financed and 8 claimed about half and half.

Question 10, on the retention of preprints and postprints for subsequent reference, yielded only one negative answer with the qualifying comment that such documents were passed on to the library for accessioning and general use.

To analyse the remaining data the returns were converted into numerical form by assigning the values +1, 0, −1 according to the answers given. For questions with dichotomous answer categories, i.e. YES/NO, the values +1, −1 were assigned. In the case of Questions 11, 13 and 14, acceptance of microfiche was denoted as +1. Where such questions were not answered zero was assigned. This procedure was appropriate for Questions 3, 4, 5, 6, 11, 12, 13 and 14 but not for 6(a) and (b), 7(a) and (b), 8(a), (b) and (c) or 9(a), (b) and (c). An artificial Question 7 with dichotomous categories was constructed from 7(a) and (b).

The nine questions, 3, 4, 5, 6, 7, 11, 12, 13, 14, were treated in one group and

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* Aeronautical Research Laboratories.

8 and 9, which have subsets of answers, were treated separately. This method of analysis is given in detail in Appendix 2.

For the purposes of this paper, the most significant question is Question 12 on the acceptability of microfiche preprints and/or postprints. Two by two contingency tables were therefore drawn up between Question 12 and each of the other eight questions, i.e. 3, 4, 5, 6, 7, 11, 13, 14, treated in this group. Using χ^2 statistics, with Yates' correction for continuity, the order of significance with respect to Question 12 was Questions 13, 6, 4, 14, 11, 7, 5 and 3. Table 4 in Appendix 2 summarizes the response patterns to these questions.

Direct responses to Question 12 indicate that about two out of three people would find microfiche preprints and/or postprints acceptable (57/31). An almost identical result was obtained for Question 13 (57/32) relating to timeliness. Consistency between these questions was very high, as indicated by the contingency table (Table 3, Appendix 2).

The next strongest consistency is with Question 6, pertaining to the accessibility of a reader. The breakdown of subsidiary answers to Question 6 is given in Appendix 1. Approximately two-thirds of respondents had access to a reader at the place of employment with such readers being usually available but not always convenient for use. For those not having readers at their place of employment few had access to readers elsewhere. Interestingly enough, eight people who did not have access to a reader were prepared to accept microfiche, presumably in the hope that they could obtain reader accessibility in due course.

On the ability to obtain paper copy (Question 7) from microfiche, 55 were able to do so using facilities at their normal place of employment, 23 were able to do so by other arrangements, but 10 were not able to do so at all. Two respondents did not answer the question. Of the 10 who could not obtain paper copy only one did not have some access to a reader.

It is interesting to note there was one respondent who did not have access to either a reader or reader printer but who found microfiche preprints acceptable and preferable to delayed paper copy postprints. He made the comment, 'I am sure that if there was any paper to which I would like to make reference, I would find a way of having a (paper) copy made from the microfiche.' I thought his attitude most encouraging.

Questions 3, 4 and 5 relate to prior awareness and use of microfiche. Only 30 respondents were used to using microfiche (Question 5); 40 had received copies of reports in microfiche form (Question 4) and 29 had never handled microfiche at all (Question 3).

Thus it is rather surprising that there were only 31 people who would not accept microfiche preprints; of these 31 people, 14 had never handled microfiche at all. Of the 57 acceptors 14 had never handled microfiche before and yet were prepared to do so in the form of preprints.

With regard to Questions 8 and 9 about reading preprints before a conference, the answers (Table 5, Appendix 2) reveal that only 14 people would read all the papers even if they were in hard copy; this would drop to five if the preprints were in microfiche form.

By far the majority of people read selected papers (74 if in hard copy and 51 if in microfiche) before a conference. Only two would not read papers even if available in eye-readable form, but 32 people who would read either all or selected papers in hard copy would not read any in microfiche. The responses of those 32 people were checked to determine whether non-availability of readers could be the underlying cause. In fact 13 had no access and 4 had access by special arrangements, but the remaining 15 had access at their normal place of employment and, of these, 6 acknowledged that readers were both convenient for use and usually available, and 3 of these 6 had actually received microfiche copies of reports.

It had been anticipated that all the respondents with no access to a reader would be included in the 32 people mentioned above, whereas only 13 were so accounted. This prompted a check on the 26 with no access to a reader. The results for that subset are shown in Table 6, Appendix 2. It would seem, therefore, that though fewer people will read preprints if they are on microfiche, this change in reading habits is not due to the non-accessibility of a reader.

Timeliness and cost are indeed significant, as shown by the following two examples. Nine of the respondents who gave their preference to 'immediate microfiche preprints' (Question 13), answered 'NO' to Question 12 on whether preprints or postprints in microfiche only were acceptable. I assume that these respondents answered each question on its own merits, and that timeliness was more important than form. Three respondents were explicit in that they preferred preprints to postprints, regardless of form. In relation to cost, there would be greater support for microfiche if the cost of the publications is to be borne by the conference delegate personally. Of the 65 preferring microfiche on a cost basis (Question 14), 16 had stated that microfiche was not acceptable (Question 12), indicating that the cost factor is important.

Of the 22 respondents who considered microfiche preprints unacceptable, and preferred delayed paper copy postprints (Table 4, Appendix 2), 7 had access to a reader, 6 of these 7 access to reader-printer facilities, and 5 of them were already acquainted with microfiche. Three of these 5 are at Aeronautical Research Laboratories (ARL) and have microfiche copies of reports; this indicates a tolerance of microfiche at least in a situation where a wanted report is quicker to obtain on microfiche than in hard copy. Why not the same tolerance of preprints on microfiche? One answer is that I asked for comments on the form of preprints, but not on the form of reports, and that in any case the responses to the questionnaire expressed preferences.

I checked further on these 3 rejectors, all of whom are members of the research staff at ARL. I will refer to them as 'A', 'B' and 'C'. In conversation, 'A' stated that it was tiring to sit in front of a microfiche reader for more than two or three minutes,* due to the indifferent clarity of the screen, and non-uniform focusing; that he wished to read preprints at home, and that the quality of the hard copy was unsatisfactory. 'A' needed convincing that he was being hypercritical of the microfiche reader, that though sometimes the quality of a microfiche report was poor, this was, usually, a reflection of the unevenly typed original, and that the unsatisfactory hard copy had been produced at a time when there were servicing difficulties with the reader printer. 'A' was asked to regard and to use reader-printer copy in the same way as copy from our other document copying facilities. Referring specifically to preprints, 'A' said he would be disadvantaged in being unable to read microfiche on the plane, or hotel room whilst attending a conference.

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* With respect to the alleged difficulty in reading microfiche, Coffman[1] has found in a survey of graduate students, that there is no significant difference in reading rate and comprehension between microfilmed material and hard copy.

In my interview with him, 'B' was rather indefinite about his reasons for preferring hard copy but had actually stated on the questionnaire, 'The following points, in my opinion, weigh heavily in favour of microfiche

(a) reduced cost to delegates
(b) one rarely wants to refer to all the papers produced at one conference
(c) the papers that warrant retention can be converted from microfiche to paper copy without too much inconvenience'.

In this, 'B' gave many of the arguments I present in favour of microfiche preprints! In conversation, 'B' said that he sometimes found the hard copy just as much of a strain to read as microfiche. On balance, however, 'B' said that if microfiche preprints meant reduced costs to conference delegates, and the possibility of attending more conferences, then he was in favour of using microfiche for preprints.

'C' had commented on the questionnaire, 'the reader is not convenient for use'. One comment I liked said, 'The largest single source of extravagance in the written presentation of papers is in my experience the extensive verbiage which is commonly used to camouflage and perhaps to conceal what ideas there may be in the issue being presented. Preprints in the form of telegrams might perhaps be an improvement on present practices'.

One respondent stated that it was 'irritating in the extreme' to have drawings, figures or tables at the end of a microfiche report, and that when preparing documents for microfiche, effort should be made to insert drawings at the appropriate place in the text.

Twenty-one comments related to the non-standard, poor quality, and/or paucity of reader and reader-printer facilities experienced by the respondents; many respondents regarded these as transitional difficulties. However, they do exist at present.

The preceding comments relating to the adverse reaction to microfiche are rather similar to adverse comments noted by Wooster.[2]

On the credit side, 2 respondents stated explicitly that the procedure followed at the symposium was very satisfactory and advocated its adoption at all future conferences.

In other discussions, several users stated that the acceptance of microfiche is a question of reading habits. If each user had on his desk a small, portable microfiche reader which projected an A4 image onto a horizontal surface, microfiche would be much more acceptable; the user would be able to read as he normally does in his office, at his desk and beside his phone. The horizontal projected image would enable him to trace graphs, etc., as required, as well as providing the customary reading environment, including his normal reading spectacles.

To sum up responses to the questionnaire, approximately two-thirds of respondents considered microfiche preprints or postprints acceptable. However, respondents did not fall into clearly dichotomous categories. Acceptability of microfiche preprints was not always conditional on familiarity and facilities for reading; nor in fact, was non-acceptance only a matter of unfamiliarity and absence of facilities for reading and obtaining hard copy. There was a significant statistical correlation between the acceptance of microfiche preprints or post-prints, and, in order of significance, timeliness, accessibility of a microfiche reader, use of microfiche reports, cost, availability of hard copy facilities and prior awareness of microfiche.

Thus the experimental application of microfiche as the primary publication form for preprints for the *Rotary-wing aircraft symposium* has indicated, judging by the responses to the questionnaire, that the majority of scientists and engineers find microfiche preprints acceptable. With improvements in microfiche readers and the increasing use of microfiche, it seems reasonable to anticipate even greater user acceptability of microfiche as the primary publication form for conference preprints in the future.

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APPENDIX 1

Questionnaire

Note. Some questions were not answered

	Responses			
1. Did you attend the Rotary-wing aircraft symposium held in Melbourne on 24 September 1973?	YES	74	NO	16
2. Did you receive a microfiche copy of the symposium preprints?	YES	89	NO	1
3. Were you acquainted with the format and use of microfiche prior to the symposium?	YES	61	NO	29
4. Do you have microfiche copies of other report form material?	YES	40	NO	50
5. Is microfiche a standard publication format that you are accustomed to using?	YES	30	NO	60
6. Do you have access to a microfiche reader at your normal place of employment?	YES	58	NO	32
If so: (a) do you find it conveniently situated for you to use?	YES	36	NO	20
(b) is it usually available when you desire to use it?	YES	48	NO	6
If not: do you have access to a reader elsewhere?	YES	6	NO	26
7. Can you obtain a paper copy from a microfiche if you so desire (e.g. via a reader/printer)				
EITHER (a) using facilities at your normal place of employment?	YES	55	NO	33
OR (b) by other arrangements?	YES	23	NO	10
8. When you receive paper copy preprints several days before a conference do you, before attending the conference, normally				

(a) read all papers		14		
(b) read selected papers		74		
(c) not read any papers		2		
9. If you were to receive microfiche copy of preprints several days before a conference would you, before attending, normally				
(a) read all papers		5		
(b) read selected papers		51		
(c) not read any papers		34		
10. When you receive preprints or postprints of conference material, do you retain them for subsequent reference?	YES	89	NO	1
11. For such reference purposes which would be the more convenient to you:				
(a) paper copy		64		
(b) microfiche		25		
12. If preprints and/or postprints were available in microfiche only, would this be acceptable to you?	YES	57	NO	31
13. Given the alternatives:				
(i) microfiche preprints distributed at or prior to a conference				
OR (ii) paper copy postprints distributed several months after a conference				
Which would you prefer?				
(a) immediate microfiche preprints		57		
(b) delayed paper copy postprints		32		
14. Assuming that you were paying your own registration fee would you prefer				
(a) microfiche documentation at \$0.50 extra		65		
(b) paper copy documentation at \$10.00 extra		15		
15. Are your conference attendances usually				
(a) self-financed		11		
(b) sponsored		71		
(c) half and half		8		
16. Please add comments on any aspect you consider to be inadequately covered by the questionnaire.				

APPENDIX 2

Statistical analysis of responses

As mentioned in the text, data was converted to numerical form by assigning the digits +1, 0, −1 corresponding to 'yes', 'no answer', 'no' responses to the questionnaire. In the case of Questions 11, 13 and 14, acceptance of microfiche was denoted as '+1'. The questions were considered in two groups: (a) 3, 4, 5, 6, 7, 11, 12, 13 and 14; (b) 8 a, b, c and 9 a, b, c.

As a first step in the analysis the digitized data were formatted into a 90×9 matrix, $[X]$ corresponding to the 90 answers to each of the 9 questions in the first group:

$$[X] = [x_{rc}],\ r = 1,2 \ldots 90,\ c = 1,2 \ldots 9,\ x_{rc} = 1,0,-1$$

Thus each row represents one respondent's answers, each column a question.

Cross product sums $S_{c_1c_2}$ were then formed between pairs of columns of the matrix $[x_{rc}]$ in order to find the strength of correlations between the answers to pairs of questions:

$$S_{c_1c_2} = \sum_{r=1}^{90} x_{rc_1}x_{rc_2}$$

Cross product sums are related to correlation coefficients by the appropriate normalizing constant. This is either 90 (when all questions are answered) or less than 90 (when answers were omitted). The 9 × 9 matrix of cross product sums is given in Table 1. Other than on the leading diagonal, cross product sum magnitudes of 20 or greater are underlined and of 40 or greater are double underlined.

	3	4	5	6	7	11	12	13	14
3	90	$\underline{\underline{48}}$	$\underline{28}$	$\underline{\underline{44}}$	$\underline{\underline{42}}$	1	$\underline{26}$	$\underline{39}$	$\underline{26}$
4	$\underline{\underline{48}}$	90	$\underline{\underline{54}}$	$\underline{\underline{42}}$	12	$\underline{23}$	$\underline{32}$	$\underline{29}$	16
5	$\underline{28}$	$\underline{\underline{54}}$	90	$\underline{30}$	−12	$\underline{27}$	10	19	0
6	$\underline{\underline{44}}$	$\underline{\underline{42}}$	$\underline{30}$	90	$\underline{\underline{42}}$	3	$\underline{\underline{42}}$	$\underline{29}$	$\underline{28}$
7	$\underline{\underline{42}}$	12	−12	$\underline{\underline{42}}$	88	−23	$\underline{\underline{40}}$	$\underline{35}$	$\underline{\underline{46}}$
11	1	$\underline{23}$	$\underline{27}$	3	−23	89	19	$\underline{24}$	−6
12	$\underline{26}$	$\underline{32}$	10	$\underline{\underline{42}}$	$\underline{\underline{40}}$	19	88	$\underline{\underline{52}}$	$\underline{\underline{41}}$
13	$\underline{39}$	$\underline{29}$	19	$\underline{29}$	$\underline{35}$	$\underline{24}$	$\underline{\underline{52}}$	89	$\underline{38}$
14	$\underline{26}$	16	0	$\underline{28}$	$\underline{\underline{46}}$	−6	$\underline{\underline{41}}$	$\underline{38}$	80

TABLE 1: *Cross product sums*

In Table 2 the 9 × 9 matrix is shown for an *ad hoc* rearrangement of rows and columns (question order) designed to force the high-valued terms closer to the leading diagonal in order to emphasize the correlations.

	5	4	3	6	7	12	14	13	11
5		$\underline{\underline{54}}$	$\underline{28}$	$\underline{30}$	−12	10	0	19	$\underline{27}$
4	$\underline{\underline{54}}$		$\underline{\underline{48}}$	$\underline{\underline{42}}$	12	$\underline{32}$	16	$\underline{29}$	$\underline{23}$
3	$\underline{28}$	$\underline{\underline{48}}$		$\underline{\underline{44}}$	$\underline{\underline{42}}$	$\underline{26}$	$\underline{26}$	$\underline{39}$	1
6	$\underline{30}$	$\underline{\underline{42}}$	$\underline{\underline{44}}$		$\underline{\underline{42}}$	$\underline{\underline{42}}$	$\underline{28}$	$\underline{29}$	3
7	−12	12	$\underline{\underline{42}}$	$\underline{\underline{42}}$		$\underline{\underline{40}}$	$\underline{\underline{46}}$	$\underline{35}$	−23
12	10	$\underline{32}$	$\underline{26}$	$\underline{\underline{42}}$	$\underline{\underline{40}}$		$\underline{\underline{41}}$	$\underline{\underline{52}}$	19
14	0	16	$\underline{26}$	$\underline{28}$	$\underline{\underline{46}}$	$\underline{\underline{41}}$		$\underline{38}$	−6
13	19	$\underline{29}$	$\underline{39}$	$\underline{29}$	$\underline{35}$	$\underline{\underline{52}}$	$\underline{38}$		$\underline{24}$
11	$\underline{27}$	$\underline{23}$	1	3	−23	19	−6	$\underline{24}$	

TABLE 2: *Cross product sums—rearranged*

Two by two contingency tables were drawn up between Question 12 (considered the most important for the purposes of this paper) and each of the other eight questions. These tables take the form:

		Q.A.		
		+	—	
Q.B.	+	a	b	
	—	c	d	c+d
		a+c	b+d	a+b+c+d = N

with

$$\chi_1^2 = \frac{(ad-bc)^2 N}{(a+c)(b+d)(a+b)(c+d)}$$

and with Yates' correction for continuity

$$\chi_2^2 = \frac{(|ad-bc|-\tfrac{1}{2}N)^2 N}{(a+c)(b+d)(a+b)(c+d)}$$

Table 3 gives the eight contingency tables and corresponding χ^2 values.

		Q12		
		+	—	
Q3	+	43	17	60
	—	14	14	28
		57	31	88

		Q12		
		+	—	
Q7	+	55	21	76
	—	2	8	10
		57	29	86

$\chi^2 = 3.93$
$\chi^2 = 3.03$

		Q12		
		+	−	
Q4	+	34	5	39
	−	23	26	49
		57	31	88

$\chi^2 = 15.41$
$\chi^2 = 13.70$

		Q12		
		+	−	
Q5	+	24	6	30
	−	33	25	58
		57	31	88

$\chi^2 = 4.63$
$\chi^2 = 3.67$

		Q12		
		+	−	
Q6	+	45	11	56
	−	12	20	32
		57	31	88

$\chi^2 = 16.39$
$\chi^2 = 14.57$

$\chi^2 = 10.84$
$\chi^2 = 8.63$

		Q12		
		+	−	
Q11	+	24	1	25
	−	33	29	62
		57	30	87

$\chi^2 = 14.43$
$\chi^2 = 12.60$

		Q12		
		+	−	
Q13	+	48	9	57
	−	9	22	31
		57	31	88

$\chi^2 = 26.79$
$\chi^2 = 24.43$

		Q12		
		+	−	
Q14	+	49	16	65
	−	3	11	14
		52	27	79

$\chi^2 = 14.91$
$\chi^2 = 12.60$

TABLE 3

The order of significance with respect to Question 12 was found to be Questions 13, 6, 4, 14, 11, 7, 5 and 3.

The columns of the original 90 × 9 matrix were then rearranged into this priority order of questions, and the data summarized to give Table 4.

QUESTIONS									NUMBER OF RESPONDENTS
12	13	6	4	14	11	7	5	3	
1	1	1	1	1	1	1	1	1	9
1	1	1	1	1	1	1	—	1	3
1	1	1	1	1	—	1	1	1	11
1	1	1	1	1	—	1	—	1	2
1	1	1	1	0	1	1	—	1	1
1	1	1	1	0	—	1	—	1	1
1	1	1	1	—	1	1	1	1	1
1	1	1	—	1	1	1	1	1	1
1	1	1	—	1	1	1	—	1	3
1	1	1	—	1	1	1	—	—	1
1	1	1	—	1	—	1	—	1	2
1	1	1	—	1	—	1	—	—	2
1	1	1	—	—	—	1	—	1	1
1	1	—	1	1	1	1	—	1	2
1	1	—	1	1	—	1	—	1	1
1	1	—	—	1	1	1	—	—	2
1	1	—	—	1	1	—	—	—	1
1	1	—	—	1	—	1	—	—	2
1	1	—	—	0	—	1	—	1	2
1	—	1	1	1	—	1	1	1	2
1	—	1	1	1	—	1	—	1	1

1	—	1	—	1	—	1	—	—		2
1	—	1	—	1	—	—	—	—		1
1	—	1	—	—	—	1	—	—		1
1	—	—	—	1	—	1	—	—		1
1	—	—	—	0	—	1	—	—		1
0	0	1	1	0	—	1	—	1		1
0	—	1	—	—	—	1	—	—		1
—	1	1	1	1	—	1	1	1		1
—	1	1	1	1	—	1	—	1		1
—	1	1	—	1	1	1	1	1		1
—	1	1	—	1	—	1	1	1		1
—	1	—	—	1	—	1	—	—		1
—	1	—	—	1	—	—	—	—		1
—	1	—	—	0	—	1	—	—		1
—	1	—	—	—	—	1	—	1		1
—	1	—	—	—	—	—	1	1		1
—	—	1	1	1	—	1	1	1		1
—	—	1	1	0	—	1	1	1		1
—	—	1	1	0	—	1	—	1		1
—	—	1	—	1	—	1	—	1		1
—	—	1	—	—	—	1	—	1		1
—	—	1	—	—	—	1	—	—		1
—	—	1	—	—	—	0	—	—		1
—	—	—	—	—	—	1	—	1		3
—	—	—	—	1	—	1	—	—		2
—	—	—	—	1	—	—	—	—		3
—	—	—	—	0	0	—	—	—		1
—	—	—	—	—	—	1	—	1		1
—	—	—	—	—	—	1	—	—		2
—	—	—	—	—	—	0	—	—		1
—	—	—	—	—	—	—	—	1		2

TABLE 4: *Response patterns*
The values +1, 0 −1 are represented by 1, 0, —, respectively.

The remaining analysis concerns the second group of questions. The resulting tables have been discussed in the text and are presented here. Table 5 is a contingency table for Questions 8 and 9 relating to reading preprints. Table 6 is another contingency table for Questions 8 and 9; this set of results is for the subset of 26 subjects claiming no access to a microfiche reader.

		Q8 (hard copy)			
	reads	all	selected	none	
	all	5	0	0	5
Q9 (microfiche)	selected	3	48	0	51
	none	6	26	2	34
		14	74	2	90

TABLE 5

		Q8 (hard copy)			
	reads	all	selected	none	
	all	2	0	0	2
Q9 (microfiche)	selected	0	9	0	9
	none	5	8	2	15
		7	17	2	26

TABLE 6

DISCUSSION

Session 1: Publication today and tomorrow

JANE FRANCIS (British Steel Corporation) asked why the public have difficulty in obtaining books from bookshops.

MR BLACK in reply gave details of the book distribution network, indicating bottlenecks which occur with the publishers and at the booksellers.

JULIAN BLACKWELL (Blackwell's) pointed out that there are 250,000 books in print in the UK, with some 25,000 new titles per year. The average bookshop cannot stock more than a small proportion of these.

MR. G. GLASER (Morganite Research & Development Ltd) said that the referee system could give rise to personal vendettas and lead to publication delay. He suggested that the time had come for this system to be abolished.

DR CROSS stated that in his twenty-seven years' experience he had not encountered a vendetta and that the proportion of time spent obtaining a reference was small compared to the author's delay in writing up his research.

MR EAKINS replied that referees were obsolete for an established author but they had an educative function for new authors.

M. B. LINE (British Library Lending Division) enquired whether the IRCS was operational yet.

MR EAKINS stated that it was 95 per cent operational.

MISS CARGILL THOMPSON (University of Strathclyde) observed that the samples of IRCS that she had seen did not have references conforming to British Standard 1629.

MR EAKINS stated that this had now been rectified.

MR I. M. STUART (Lancaster University) asked whether the IRCS referees had difficulty in refereeing a paper of 500–700 words and what proportion of communications were eventually published in conventional journals.

MR EAKINS replied that the difficulties in refereeing a brief paper had mostly been overcome and that it is too early to show how many papers receive conventional publication.

MR D. MASON (College of Librarianship, Wales) drew Margaret Sheppard's attention to question 12 on her questionnaire and remarked that the choice given was microfiche or nothing; he also enquired the age of the respondent, implying that microfilm was less acceptable to older workers with failing eyesight.

MISS SHEPPARD replied that a microfiche reader/printer was available to the recipients of the microfiche. As to the acceptability Miss Sheppard stated that most of the recipients were middle aged and over.

Letter to the Editor

Sir,

The paper by Mr Houghton and Miss Prosser (*Aslib Proceedings,* Vol. 26 No. 6, June 1974, 'Rationalization of serial holdings in special libraries') takes a useful step away from theoretical models of journal holdings and toward calculations that may be of some practical use to librarians. In particular, the cost-per-use calculation is a great improvement on crude rankings according to the number of expected uses. However, a number of points should be made with regard to this paper.

What criterion or measure a librarian uses when deciding whether to buy or borrow journals depends on his purpose in making the decision. The simplest situation is the one mentioned by Houghton and Prosser, where a librarian has to cut his expenditure by x per cent of £x. If it is merely expenditure on subscriptions, processing and other costs do not come into the calculation at all. If however it is *all* expenditure except that on staff, binding costs must be taken into account, and since the number of volumes per year varies greatly between journals (from 1 to 26), even in the same subject field, *average* costs are of no use. If expenditure on staff has to be reduced as well, processing costs have to be included; these too vary greatly between journals, according to the number of issues per year (which may range from 1 to 52), and here again *average* costs are inadequate. These points are not trivial ones: binding and processing costs can easily equal subscription costs, and their inclusion certainly affects journal rankings. A 'free' journal justifies its acquisition only if it is fairly heavily used or if it is thrown away after a year or two without binding.

Houghton and Prosser give a 'storage' cost 'per average title' of £2.20. They do not state whether this means maintenance costs (stocktaking, cleaning, etc.), building costs, or both; nor whether this cost is calculated over one year or several (and if the latter, how many). If both building and maintenance costs are included, the cost of a year's intake of a journal, assuming retention for ten years or so, can easily be doubled. A librarian will really need to take account of storage *costs*, but he may, if under pressures of space, want to see if his stock is earning the space it occupies; if so, the relevant criterion will be uses per unit of space occupied.

Librarians should realise that the reduction of expenditure on journals can be the first step on a slippery slope. Since rankings by cost-per-use usually follow an exponential curve, it can be shown that the librarian can reduce his expenditure by, say, 20 per cent, while reducing the number of uses of the collection by only, say, 5 per cent. The deleted titles are then removed from the rankings, which still of course follow an exponential curve. The following year, 20 per cent can be cut from the reduced budget, while losing only 5 per cent of uses of the reduced collection. After a few years of this, the librarian will be spending very little on journals. The total uses made of his collection will have dropped only gradually, *but* the percentage of total requirements of his users that can be satisfied by his collection may well have fallen to an absurdly low level. It is very dangerous to use demands on a particular library stock as a 'total' which can be eroded: the correct total against which to calculate satisfaction is the number of user requirements.

It should also be noted that once a journal is cancelled, the actual demands on it may fall substantially because it is no longer there. It could happen that a journal which justified its keep in terms of cost per use, if it were cancelled, would fall to a level of usage which would never justify reinstatement. Conversely, some journals not currently acquired might, if bought, prove to justify themselves. While there may well be pressure on librarians to reduce their resources, there may well be a very good *economic* case for increasing them; and while some journals might well be cancelled, there may well be others that should take their place.

A lot of work is required if journal expenditure is to be optimized precisely. New calculations need to be made each year, since journal prices change, staff costs change, and the cost of BLLD forms has also been known to change. In practice, however, decisions can be limited to marginal titles. Where these are cheaper to buy than to borrow, there is no problem. If any are significantly dearer to buy than to borrow, a decision to retain must be justified on other than economic grounds, such as who wants them and how urgently, how well they are covered by secondary services and how quickly, etc. Librarians are not faced with the choice, as some recent literature would imply, of doing nothing, making arbitrary decisions, or making time-consuming and complex calculations: a few relatively simple calculations will usually give them all they need.

Yours faithfully,

M. B. LINE

Director General, British Library Lending Division, Boston Spa

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Compiling and presenting information for maximum impact

Turlough O'Brien
Public Relations Consultant

Paper presented at the 48th Aslib Annual Conference, Churchill College, Cambridge, 22nd–25th September 1974

Abstract

To make the maximum impact, whether the object be to secure co-operation or conversion, information must be compiled and presented with the answers to a number of questions in mind. To whom is the information directed? What do they want to know and what do the presenters of information want them to know? When are they most receptive to information and when are they most likely to act on it? Where can information be given especially if it is to be acted upon? Why is information wanted and why is it to be given? How is it to be given? Each medium has its strengths and its weaknesses. The choice will depend on the answers to the first four questions.

Naturally enough the presentation and indeed the compilation of the information will vary from postmen to Parliamentarians and from executives to engineers. Each group will produce different answers to the five questions and on the answers will depend the presentation. If, for example, the information to be given is long it might be that the medium should be an exhibition or a leaflet. If on the other hand, emotion and drama becomes the main factor in the information then a film is undoubtedly the best medium. But whether the target groups are Parliamentarians or postmen they will want to have information which principally concerns either their constituency or the sorting of letters for their delivery.

THE LATE ERNEST BEVIN said that in speaking to trade unionists, timing is everything. Tramwaymen, he said, are easy; they drive along set tracks. You can talk to them at any time of the day. But busmen are difficult; you must talk to them before they go out. After driving their buses in London traffic, they are, he said, 'Very fradgitty'. Mr Bevin also said that one must adapt what one says to suit the audience.

He told how he was addressing engineers for the first time. After he had sat down almost with tears in his eyes after a very emotional peroration, the first questionner wanted to know what the speaker thought of sub-clause so and so of clause such and such of the agreement of 1900 odd. As Mr Bevin said, 'What more can you expect from people who are always working to one thousandth of an inch.'

If I have misquoted that very great man, I hope that I shall be forgiven. The occasion when I heard him was just about 30 years ago at the Staff College at Camberley. What he said, however, illustrates at least two aspects of the giving of information to secure action: when information should be given, and the people to whom it is given.

To make the maximum impact, whether the object be to secure co-operation or conversion, information must be compiled and presented with the answers to a number of questions in mind. To whom is the information directed? What do they want to know and what do the presenters of information want them to know? When are they most receptive to information and when are they most likely to act on it?

Where can information be given especially if it is to be acted upon? Why is information wanted and why is it to be given? How is it to be given? Each medium has its strengths and its weaknesses. The choice will depend on the answers to the first four questions. Naturally enough the presentation and indeed the compilation of the information will vary from postmen to Parliamentarians and from executives to engineers. Each group will produce different answers to the five questions and on the answers will depend the presentation. If, for example, the information to be given is long it might be that the medium should be an exhibition or a leaflet. If on the other hand, emotion and drama becomes the main factor in the information then a film is undoubtedly the best medium. But whether the target groups are Parliamentarians or postmen they will want to have information which principally concerns either their constituency or the sorting of letters for their delivery.

In general therefore one must establish one's objective, that is, what one wants to achieve by presenting information. One must identify as clearly and as closely as possible the individuals or groups one wants to influence with the information and present the information in ways best calculated to achieve impact and secure action.

The groups with which I have made most contact are users of the Post Office services, householders, members of both Houses of Parliament, and the staff of the Post Office. I shall hope to illustrate what I want to say from examples of information which was intended to secure action and sometimes succeeded in doing so. Before one can compile the information one wants to present, one should if possible do some research to find out the answers to the questions set out, but first and foremost who does one want to inform and what do they need to know in order to achieve action. Moreover, at some time one must give a compelling reason for taking action. A thorough research through a survey of opinion is costly but invaluable in ensuring that the direction of information is right.

The information should be set out in a basic document showing whom one wants to inform, what they need to know, what one wants to tell them, when and where are the best time and place for information, and how one wants them to act. This brief needs as careful writing and presentation as any subsequent form of presentation. It may then be used as the brief for opinion formers, for exhibition designers, film-makers, TV producers, advertising agents, and so on. If the brief contains all the information anyone could need, it may be long. If the object is to be absorbed and the supporting material understood the brief must be clear and persuasive but once this has been achieved, the problems of selecting the forms of presentation, the information to be presented, and the timing and location become much easier to solve.

I do not think I can over-emphasize the importance of simple, clear English in anything which is designed to achieve the maximum impact whether on the ultimate recipients of information or on those through whom the information will be conveyed. All of us, engineers, marketing men, civil servants, PR men and, as I have learnt this morning, librarians, develop our own jargon and inwords. These are splendid but are often barriers to communication between the groups. Pierre Navet once said that the best medium for clear communication between countries and between engineers, marketing men, librarians, etc. is what he calls Continental English. This has a minimum vocabulary of 800 words and a maximum of 1,200 words. The upper limit prevents jargon. A limited vocabulary generally ensures the use of active verbs.

If one is dealing with a very large number of people the information one gives must be very simple or at any rate be capable of very simple expression in the mass media. For example, in the happy days when at least 95 per cent of letters paid for at the full rate reached their destinations on time, the Post Office wanted more people to write letters. On the assumption that people do not like writing letters, but enjoy receiving them, we designed a campaign in 1962: 'Someone, somewhere, wants a letter from you'.

As this is a rather emotional appeal we used television, supported by press advertisements and posters. We know that the posters made some impact because we received 3,000 proposals of marriage for the girl in the posters. As she was a composite creation it was a little difficult for her to respond. The television advertisements showed various people waiting for letters, an old lady, a young soldier doing his military service, and a young girl, among others. As to the results of this information that people liked receiving letters, the chief statistician admitted that manuscript addressed fully paid letters had increased by 4 per cent and that he could not find any factor to account for this rise. So perhaps, he said, very grudgingly, the campaign could be responsible for it.

On another occasion the Post Office wanted to inform the counter staff and those members of the public who used Crown Post Offices about a new system of services for the public. It was very important that the counter clerks knew why they were to change their way of working and that the change was important, and helpful to the customers and valuable to themselves. This last point developed from the basis of staffing and the hours needed to complete the work load of each day. The necessary information and action required was included in a well-printed brochure in a larger type than might have been thought necessary. The main points of information and action were set out in clear and informative headlines. The larger type made the whole brochure more easily readable. The size of type is often underestimated. Large type is always used for the very young because it is easier to read. Typographers and cost accountants hate it: the one because it does not look artistic; the other because naturally enough it increases the cost. Yet it is easily read, particularly by any one glancing at it for reference and also by the middle-aged whose arms are becoming too short for focus. Indeed the staff found the brochure easy to read and convenient for reference and often enough the informative headings, set in bold type, provided the guide for action.

For the public we thought that both free standing posters placed at strategic points near the entrances and notices over each position saying that anyone could transact any business at any position would be enough information to produce the necessary action. We reckoned, however, without the innate conservatism of the British. They persisted in queueing. When, however, we added the information in bold letters that a new system was in operation, everyone acted as we hoped they would, though a few instinctive queuers still tagged on to anyone who was waiting to be served.

On the telephone side in those days we wanted more people to telephone each other outside the busy periods. To achieve this we explained how much cheaper telephoning in the cheap rate period could be and showed how a telephone call brought people together with the simple information that for a small sum, certainly compared with the cost of travel: 'A telephone call brings you together'. Unfortunately this information produced too much action and the telephone engineers had to install new circuits to cope with the increased traffic in the cheap rate period instead of the increased traffic making use of circuits which were too little used outside of the previous peak periods.

We also wanted business firms to ensure that they had sufficient lines to cope with the traffic which they generated and that their switchboards were adequately staffed. We wanted to show that a number of firms appeared either to be permanently engaged, because they had too few lines or did not answer their phones because they did not have sufficient trained staff to answer the calls. As the action or decision required would come from managing directors or office managers we had to give them information about the part their operators and switchboards played in such a way that it reached them direct and also that these august people to whom the information was directed would see it, absorb it, and pass it on with an injunction to action. We produced a booklet, 'The telephone, open door or obstacle?'. I doubt, however, whether the valuable information contained in the booklet would have been read and still less acted upon without the attraction of some delightful cartoons by Anton illustrating a number of the telephone problems experienced by secretaries and switchboard operators. Sent to chairmen, managing directors by name, the booklet achieved some readership judging from a number of congratulatory letters and some action measured by an increased demand for new switchboards and a further spate of advertisements for Post Office trained telephonists.

But in no way could the information about the need for adequate switchboards and properly trained switchboard operators be given better than in a film. A business telephone conversation can still involve quite often an executive at each end, two executive's secretaries and two switchboard operators, or any combination of these. A film can show what can go wrong if all those involved do not play their part efficiently, quite apart from certain mechanical vagaries. Humour, without which such a film might be very dull, however enlightening, can easily be introduced. With humour, a film like 'Business Connections' can be and was shown to gatherings of office managers, Chambers of Commerce functions and can be made available for showing inside firms. In these ways information can be given to those from whom action is required.

Sometimes, of course, the information to be given is simple. For example, if postmen do not turn out completely the bags into which they have collected letters, some letters may not reach the sorting tables. This information has to be given at the places at which postmen empty their bags onto the segregating machines. As the information and the action are simple, a poster or line drawing with frequent change of treatment can and does achieve the necessary action, but unless there are frequent changes of treatment the information may become just another element in the general background and no longer a spur to action.

On the other hand, the precautions to be taken against robbery from mail vans, which include not giving anyone any information which might reveal routes taken or contents, as well as locking up, setting alarms, and action to be taken if attacked can best be given in a dramatic way in a film in addition to written reminders inside a van and verbal reminders from time to time.

One of the many advantages of film for information is the combination of the spoken word and visual images. One disadvantage is cost.

There are many people greatly experienced in the giving of information who believe that word-of-mouth information is the best as well as the cheapest way. It is true that I can remember vividly what Ernest Bevin said 30 years ago, but all too often what is said is quickly forgotten. One method of combining oral with visual information is the easel technique. While the speaker is talking he turns over sheets on which what he is saying is printed in large type which all the audience can read. What has been said and has been shown on the easel can be distributed in a leaflet as a reminder. Also there are exhibition stands on which lights are directed to each panel in turn and a tape speaks the words as they are read on the panel. For information that requires action by everyone in an organization proper channels of communication from top management down the different levels of management to first-line supervisors and those on the shop or factory floor are essential. A series of talks and discussions can be given by the senior man present starting with the Postmaster General or chairman speaking to regional directors; then the regional directors speaking to telephone managers or postal managers; then the managers talking to first-line supervisors and finally the first line supervisors talking to the rank and file. At each level there is a brief for the speaker together with a leaflet for each member of the audience. The speaker at the next level would have a detailed speaker's brief and so on down the chain.

Finally each member of the staff receives a personal copy of a leaflet adapted to his or her work. However the briefing and the leaflets may work out, lucky is the firm or organization which has involved in its organization joint production or joint consultative committees. Members of these committees will feel bound to try to absorb and to pass on the information which they have received. At any level of communication, unless someone really feels that his or her duty includes passing on the information, the channels will run dry. As long as the joint production movement operates in effect, any organization can rely on members of the joint production committee to be centres of information in themselves. In fact special local committee papers for discussion by members prove an excellent means of communication.

Outside an organization itself there are occasions when the support of Parliament or at any rate of members of Parliament is all-important. In considering information for members of Parliament one must remember that except for the Government few people will be concerned with Parliament as a whole. At the same time the way in which a minister informs Parliament of his policy may well be a useful starting point for the consideration of the compiling and presentation of information to members of Parliament by others.

There are two main elements in the presentation of information, statements and White Papers. If Parliament is sitting a statement will introduce a White Paper.

Many people feel that M.P.s have a great deal to read and not much time to spend on any one document. Therefore, as Ernest Marples proved when he was Postmaster General, White Papers written in the simplest, most straightforward English of which the meaning is as clear as possible will receive greater attention and acceptance than those written in Civil Service language. This, of course, applies to all information to whoever it may be given but it applies particularly to those who have little time in which to absorb what is written.

Naturally enough to ensure that the meaning is clear requires a great deal more time and thought than a paper which those writing it may understand but not those who know less about the subject. Even with the simplest, clearest English, White Papers are improved by clear and informative headings showing the line of argument.

A White Paper may affect different constituencies in different ways. Each M.P. will want to know what happens in his own constituency. Maps and descriptions for each constituency placed in each M.P.'s pigeon hole will help him or her to understand and appreciate the White Paper. Certainly this worked when Mr Marples announced the enlargement of the areas covered by local telephone calls.

Not many people outside ministers and civil servants are concerned with statements in Parliament but they are an important element in information. Some people believe that statements should not exceed some 300 words. Certainly statements of that length seem to receive a better hearing. To compress the necessary information within such limits is a considerable exercise in presentation but well worth the time and effort. For information which concerns both Parliament and the general public very careful preparation of briefs is important.

Starting, for example, with any statement in Parliament, if this is to be limited to 200–300 words, it may be that some information needed for expansion of the main points should be brought out. That being so, questions which will elicit the information have to be thought out and answers prepared. The questions have to be given to those who will ask them in the hope that the questionners will catch the Speaker's eye. The preparation of answers to possible hostile questions is of course a routine affair.

Generally speaking a statement in Parliament is followed by a press conference. A longer speech of up to 20 minutes has to be prepared. Because journalists may, and undoubtedly will, ask far more questions than members of Parliament have time to ask, a list of all possible questions and short comprehensive answers is prepared. Probably by no means all will be asked, but if the speaker is well prepared the information conveyed by the answers will have much greater impact.

This was certainly so on the first occasion I used this form of briefing. The BBC wanted the Home Secretary at the time to hold a TV press conference on

Crime. He agreed to do so provided I could forecast the questions. I worked out some eighty likely questions, my colleagues produced answers and together we reduced them to a maximum of 200 words. The Home Secretary learned the answers by heart. Out of the thirty questions he was asked, twenty-nine had been anticipated. To all of these his answers were clear, comprehensive and concise. After about 20 minutes the journalists were racking their brains for questions to ask.

After the press conference there are usually TV and radio interviews. The probable time allotted to the broadcast of these interviews will be perhaps 3 to 5 minutes. So one is back to the problem of condensation. There are, however, usually three or four key questions and if these can be forecast and answers prepared, the interview on the screen or on the air will provide information which will have maximum impact.

It may be that the organization has local branches. What is said by local people to the local press will have much more impact than anything said in London.

To convey information successfully to their local press or TV or radio local managers need to know what the minister has said. In order to avoid a breach of Parliamentary privilege, no information must be offered until after the statement in Parliament. The information should contain notes taken from the Minister's speech, a summary of the document that has been published, and the prepared answers to the likely questions.

In this way information can be given successfully to the local media and through them to the local community. This frequently has more impact than national announcements.

For an outside body wishing to give information to M.P.s careful compilation and presentation is of even greater importance. It may be as well to realize that apart from the two Houses, there are many groups and committees within Parliament.

There is a very useful unofficial booklet *Who does what in Parliament.* This covers any Parliament which has had time to settle down and shows the membership of all the different committees on different subjects. For some subjects or areas there may be all-Party committees. The geographical committees, for example the Latin American Committee, are all-Party and their membership is shown in the booklet. For other subjects, for example Social Security, there will be separate Party committees. Sometimes only the chairman, deputy chairman and secretary are known and anyone who is interested in the subject in which the committee specializes will attend meetings. Opposition committees will tend to flourish more than those of the Government Party.

Whatever their complexion or composition, the Parliamentary committees must be the base for any information given to Parliament. The members are at any rate ready to absorb information on their subject. They will attend meetings to be addressed by experts, but they will welcome information in the form of a brief. If later there is a debate on the subject, those members interested will always be glad to receive a brief on the subject.

If a particular member speaks, this will receive publicity particularly if there is an application to his constituency and this will ensure information going to the local community. Generally, however, the opportunities for outside bodies to influence policy occur when that policy is being shaped. Organizations and bodies concerned with a particular sphere of activity, for example, pensions, conservation, population and so on may be consulted by ministers or civil servants.

If organizations want their views to be known they must express them. The reception of these views and their impact will depend not only on the nature of the views but on the forcefulness and clarity with which they are expressed. Once again the basic brief is of great importance. Ministers, even if they are opposed to the views of the body concerned will usually meet representatives of the body. At such a meeting they will be accompanied by their civil servants. Now as both ministers and civil servants play their part in the framing of policy, it will be important to ensure that after the meeting all those concerned receive a memorandum of the views of the organization.

This memorandum can also be used to ensure that the press and the broadcasting organization are informed of the views. If the ministers agree to publication of the memorandum, this is an advantage. But to ensure that the press understand the views a briefing for those with a particular interest in the subject is necessary. Interested members of Parliament will welcome a brief. They are most likely to be found in the appropriate committee. The brief will have most impact if delivered to members in sufficient time before a possible debate for them to digest it and if necessary discuss it with the experts. Ministers on occasions issue consultative documents on which they ask for the views of the organizations concerned. These again provide opportunities for the influence of policy and for publicity.

In the debates both on White Papers and on the consequential bills, the support of well-briefed members of Parliament can help to adapt policy. If a number of constituencies are affected by a policy, or indeed a particular part of the community covering the whole country, mass lobbying at Westminster or of individual members in their constituencies may be involved.

Any of the techniques employed for central Government apply for local government and the same principles of meetings, briefings and so on at local level may often be necessary at the same time as central activity.

I have given a few indications of how information can be compiled and presented to secure maximum impact. This is a very wide subject and no doubt the other papers will deal with aspects of it in detail. I appreciate that I have dealt with general rather than technical information but I know something of the former while you are experts in the latter.

Effective presentation of information in a dynamic situation

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Abstract

The need to communicate information effectively to a diverse, technically based audience is discussed. The range of media available is surveyed, extending from formal verbal exchanges, through memos, computer printouts and films, to research reports. The importance of weighing required impact against costs is stressed.

It is necessary to assess new office systems and communications methods as they become available, to identify relationships with existing proven operations and to consider the desirability of changing the latter. The influence of customers' changing needs and the problems in commissioning new systems while phasing out old ones are included.

No one mode of communication is best for all users. Therefore a complete repertoire of systems should be developed in an information department and then the optimum medium sought for each user. This will ensure that vital information always reaches its target.

Selective reference is made to the past and present methods used at J. Lyons, where it is possible to trace the evolution of the present Group Scientific Information Service from a small laboratory library over a 7-year period.

Introduction

FOR THE PURPOSE of this article information will be defined as knowledge which is transferred from a person (or other store of knowledge) to another person in such a way as to encourage action by the recipient. If the aimed-for action is brought about then the information will have been presented effectively.

It is necessary to consider the characteristics of senders and receivers of information since in order for information to be communicated there must be at least one of each of these. These people exist in an environment which is of necessity changing. The effects depend on how the information is communicated. These summarized parameters all interplay and in a 'real' situation must be considered as an integrated dynamic whole.

For convenience in this paper, however, comments will be grouped under main headings.

Receiver's and sender's characteristics.
Environment and change.
Methods of communication.
Impact and costs.

Receivers' and sender's characteristics

It is generally possible to fit a receiver into one of the following categories.

Never or only occasionally likes to receive.
Likes/needs small useful amounts.
Likes/needs to receive everything.
Fetchers.

Similarly a sender may be placed into one of the following:

Holds most knowledge to himself (miser).
Should send as part of his job, but tends not to.
Wants to send in meaningful amounts.
Sends everything without thinking (compulsive).

Comparing these two tables it will be realized that there are certain compatible situations, for example, the miser will get on well with the man who never or rarely receives.

There are many occasions, however, when it is desirable or necessary to establish a communications link and yet the receiver and sender are not in tune with one another. Factors which can affect tuning are:

Personal interest.
Common ground.
Training.
Ability.
Language.
Rewards or penalties.
Status difference.
Proximity.
Time.

Each person has a different background, a collection of basic knowledge, and will judge newly presented information against this base. The training which a person has had will also govern the type of information he can assimilate. Pressures like differences in status and the lack of time can contribute importantly to the level of understanding and hence communication which is achieved between two persons.[1,2]

Needs

A person's need for information may be broken down into (a) wish to have (usually for personal reasons), (b) knows he needs to have (for business or social reasons) and (c) ought to have (for his own betterment). Another view has been presented by Line.[3]

In the world at large changes are occurring so that the number of people who wish to receive information in order to make themselves better citizens, or to enable themselves to participate more in the organization of their lives, is increasing. Examples are student demands for representation in university governing bodies and unions' demands for worker directorships.[4]

The capability for making better business decisions will be improved when the existing knowledge has been checked and supplementary information gathered.

In everyday life it may be necessary to remind people to give way at road junctions or not to smoke in inflammable atmospheres. In a business situation it may be necessary to remind someone that he needs more facts before he can make a good decision.

Understanding

Because each person has his own perception of events around him the information he gathers or gives out will be heavily influenced by his present tasks, business or domestic. It will also depend on the resources, money and materials which are immediately to hand.

For anyone engaged in the profession of information handling there is, then, a great deal to bear in mind when setting out to receive information in preparation for sending it out again in response to specific requests. The ideal professional will be a delicate blend of a fetcher of information, a miser and compulsive sender from which the most suitable elements will come into play, depending on the needs of the moment. The best that can be hoped for in practice is an awareness of one's Jekyll and Hyde characteristics, and to make an effort to bring out the best characteristics and suppress the worst.

In considering how to present information to a client it is necessary to consider whether one understands all the client's needs or whether one suspects that some have not yet been expressed properly. Perhaps it is better to blissfully assume that he should have every fact we know on a subject. Or perhaps some awkward information should be held back because it is based on uncertain premises and so on.[5]

Maybe he will not have time or the inclination to read a great deal, or the capacity to understand what one wants to send him in answer to his question. The answer will then need rephrasing so that it is in a language compatible with his understanding. What is his understanding? How does one know it? Ideally one must spend time getting to know all one's clients in a relaxed way so that when a query does come up one can deal with it in the best way for him, with a minimum delay. In practice one must augment this at the time that the query arises with a quick check on the questioner's work so far. This will give an idea of his level of understanding.

Never forget that what is best for one man may be third-rate for his colleague. Whereas a researcher may want all the original papers on a topic his boss may only want one paragraph summarizing them all. Furthermore, the summary will need to include different points than if it were for the researcher himself.

Professionalism

It is not good enough for an information department to take it upon itself to provide a specific service, for example, current awareness bulletins, without first seeking to establish that this is needed. Innocent clients may be glad of the apparent help not knowing that they are being sold short. This is where professional skill and integrity comes in. Each professional information handler has a responsibility to see that a client is offered the full range of services possible to fulfil his needs so that he may exercise his own judgment in the final analysis. This may be as simple as telling a man he can have journals on circulation as they arrive or an abstracted selection from these at monthly intervals. Above all, prejudices should be held carefully in check and audited from time to time.[6]

It is vital to connect an information service into the corporate aims of its parent organization[7] and to do this a public relations or marketing effort is essential. Several papers have been written on this so it suffices to say that any 'selling' effort must be based on a fully professional service which will be able to supply the goods as advertised.[2,8] The reward will be more responsive clients who feel that they are understood and will come back again and again.

At a recent BIM meeting William Bree defined the professional manager.[9] There were four elements in his definition which may be summarized as a statement of beliefs, standards of competence, a body of knowledge and a discipline to maintain the standards. Thus, having attained initial competence, a professional manager has to constantly review his need for refresher courses, retraining and take the appropriate action if he is to keep on top of his job.

Environment and change

For communication to be successful both receiver and sender of information must have a knowledge and appreciation of the environment within which they are working. Any one chosen environment is fluid and changes under the influence of external pressures. For information to be presented effectively in what is, then, a dynamic situation it must itself be created by a dynamic sender. By this is meant one who has his eye constantly on environmental changes affecting the receiver and alters his presentation to take these changes into account. Lack of consideration for a client's revised interests in a business organization will be construed as lack of departmental ability at best or a personal insult at worst. Gradual changes are harder to keep track of than sudden major changes and will, in addition, be more difficult to deal with. This is because the effects which can be credited to them are poorly defined and will be diffused into other things. Even so it is dangerous to respond to one easily identifiable change without consideration of the whole environment. It is important to consider the consequences of actions before taking them and to check at intervals whether one is in command of the situation or vice versa.

When the conclusion is reached that an information handling system should be changed there are two other factors to consider, the clients and the information staff, if any. Clients have already been discussed in some depth. It is fatal to plan a change in routine or service without involvement of the other members of that service, those who have to make things work. Best of all will be an environment which allows these workers to press for the change(s) themselves without prompting. More usually, though, someone standing a little back from the operation can see it more objectively. This objective view needs then to be explained to the persons whose responsibility the operation is. They in turn will change emphasis here and there and the best final new solution will be some kind of compromise. Putting into practice the agreed solution will not then be a foregone conclusion. Very often considerable strength of character is needed before staff reach full competence in the new system.

An example which illustrates this type of change at Lyons relates to the way in which requests resulting from the abstracts bulletin are now dealt with. Abstracts were at one time made for selected journal articles and then compiled into bulletins while the journals were circulating. When requests were received for the complete articles referred to in a bulletin these were held until the journal returned to the department and then satisfied. This was a system which suited the situation of few requests and a small, understanding community of users. Gradually the number of both users and requests increased. It became apparent to non-system operators that although cheap on materials this process was expensive on operator's time. A complicated method for capturing the journals as they returned on the controlled circulation system had to be evolved and worked. Some journals never came back and so abstracts requests could not be satisfied.

An investigation was made, as a special project, of the ways of dealing with this and a proposal made to the staff involved in the day-to-day work. Slight changes were made and a new system evolved which requires a copy to be made of each article abstracted at the time it is abstracted. This is then held and used as a master from which requests are satisfied. Since that time (1969) further changes have taken place so that now scanning and photocopying is done in one process, so that while abstracting and indexing is being done the journals can be started on their circulation.

One of the ways which information and library systems are often changed nowadays is to take account of newly developed commercial services. It seems to be rare for a service to buy in a 'packaged' service and use it without modification.

At Lyons studies have been made over the years to meet changed organizational needs, of abstracts services, and others produced by Chemical Abstracts Services, the Food Research Association, PIRA and, most importantly, the International Food Information Service. None of these provides Lyons personnel with exactly what they need. Typically, some subject interests are covered but not all, few technology oriented and many research oriented items are included, the time factor may be poor, the product too bulky. So, although as a central service Lyons Group Scientific Information Service (GSIS) continues to subscribe to several abstracts services, it also continues to produce its own from primary sources.

In direct cost terms there would be a saving if in-house abstracts were not produced. The users would, however, suffer appreciably (shown by market research and analysis of the outside services) by the loss of a pertinent alerting service and also because the abstracting staff would not have this updating mechanism behind them when they answered enquiries.

At the other end of the scale advances in technology may be introduced into a system without changing it totally. For example, 8 years ago in GSIS it was a question of making sure manual typewriters were changed for electric ones and stencils for off-set litho masters. Nowadays, consideration of the production of abstract bulletins from a computer store and the possibility of satisfying clients' requests by microforms are uppermost. Facsimile transmission to remote sites is also to be investigated again now that it is becoming cheaper and faster.

Another example of a change which has been dealt with is probably typical of those which most organizations endure. From having had no measurable commitment in fresh fruit and vegetable production Lyons became very committed. This meant that an information base to deal with the attendant technical problems had to be built up in less than a month. Again, this was where professional training helped since valuable resources were rapidly tracked down and contacts built up. Then just as suddenly, but more predictably, the commitment was dropped again.

Methods of communication

To assist in breaking down barriers to communication, real or imaginary, there are now many devices and techniques to enable information to be effectively presented over both long distances as well as short ones.

This century has seen the development of methods of communication which are now taken for granted by children if not by adults. For example:

Telephone.
Radio.
Record player.
Films.
Television.
Tape recorder.
Microforms.
Computers.
Video film aids.
Facsimile transmission.

Whereas pensioners have just come to terms with telephones and televisions, school children are happily looking things up on microfilm catalogues in their local public library. Stereo transmissions are taken for granted. Readiness to accept is governed by the value which an individual places on a device. Television is a source of much pleasure to many people; so are microfilm devices for children. Phones can be a mixed blessing and older people who have not had a business need to use them still fight shy, whereas children who 'dial-a-disc' see them differently.

These developments have given society tremendous opportunities for dealing with the communication of knowledge, for example if speed over a distance is of the essence telecommunication is the answer. Large storage capacity or transfer of large amounts of information may be best achieved by microform or magnetic tape, whilst rapid sorting and selection can be achieved using computer technology. There remain the long-established methods of communication such as the printed word or diagrammatic representation and, most valuable of all, the spoken word.

Impact and costs

The article so far has shown that a piece of information means something different to each person, that it is changing and that the ways it can be transmitted are many and varied. An attempt will now be made to put all this together by looking at the impact and costs. At one end of the scale there may be a collection of knowledge on which persons may call. This might be something less than a library, rather just a dump of documents. Clearly the impact of such a service, if such it can be called, is completely dependent on the receivers of information, in this case fetchers. Cost will not be excessive to the 'senders' and merely a function of the way in which the knowledge bank is set up. In a sense private lives work in this way. Knowledge is all around and it is up to the individual what he makes of it. If time and money is wasted it is the responsibility of the fetcher.

At the opposite end of the scale is the case in a business situation of the personal assistant who knows his boss's requirements precisely and sets out to provide him with as much or as little as he needs in each specific instance, including perhaps a regular alerting service. Here the greatest cost is in time preparing the information before communication. In this case the impact will be great provided the cost is high. There can be no cut-price jobs. The importance of the personal link should not be underestimated. Between these two extremes is an infinite number of possibilities. It must be remembered that the more busy or (self-)important a client is the less likely it is that he will give feed-back on his satisfaction, only his dissatisfaction. Some examples of things which affect impact are:

Specificity of the presentation.
Resources available, money and materials.
Quantity and form.
Frequency or timeliness.
Professionalism of presentation.
Status of recipient.

Some of these points have been mentioned already which underlines the comment above that the business of presentation must be dealt with as an integrated whole.

Personal service

The more specifically a piece of information is tailored the better it will be for one person. But the cost of this compared to a news sheet or abstracts bulletin serving a slightly less specific purpose will be far greater. What do the funders want? What do the policy makers want for their money? This question must be asked continually. If they only maintain minimal equipment or personnel they will have only a minimal service.

The objectives of a public library may be completely different from those of a special library. The important thing in either case is to establish what these objectives are because only then can information be presented effectively and thus contribute to the achievement of the objectives.

Quantity, form, frequency and timeliness

Always consider what other information a person is routinely receiving and try to fit into the corporate picture. Frequently one is advised to avoid irritating a person by telling him the same thing twice or by sending too much on one occasion. It may happen that because a man's interests change it is vital to send again a piece of information, which was of fringe interest but is now a main stream interest. General notices must be reissued to take account of persons newly arrived, and of losses by the establishment.

If one particular message is vital perhaps it should be sent by two or three ways in close succession, rather like some advertising campaigns are now run, with appetizers to begin with. This requires a high degree of professional acumen.

Largely because of the sophisticated advertising which nowadays bombards everyone from all sides, most people have a built-in switch-off mechanism which rejects the majority of information presented to them. To achieve switch-on the 'interest threshold' must be exceeded.[10] One of the simplest ways of doing this is to present information exactly in the subject interest fields of the potential receiver. Unfortunately in the business environment most items are peripheral in relation to our main subject (therefore do not get over the threshold) but will affect our environment in some subtle way.

Pleasant visual effects are used to good purpose by advertisers but in a less spectacular way may be exploited by all communicators. At the lowest level, a neat layout in a library with clearly legible guides will attract more use than a nondescript pile of documents. The tools to identify specific items of information in an information service, for example a catalogue, should be presented to the user in a pleasing manner, with the detail legible and logical in layout. Perhaps this is one reason for the trend towards alphabetically ordered computer produced catalogues away from the more traditional numerical indexing systems. The exclusivity of a UDC index, in that users cannot be casual, is a direct contrast to English language alphabetically ordered indexes.

Turning to presentation of information by means of documents it is always necessary to weigh up the extra impact and the extra cost of printing on heavy weight art paper with glossy illustrations against a rougher note (typed or even handwritten) on poor quality paper with line drawings at the most. The use of proper English sentences or of telegraphese is a matter which has been debated at many meetings. Value judgments have to be made all the time. 'Professional' standards deplore the absence of clearly written abstracts but research work has shown that provided the title is reasonable what follows makes little difference to the reader catching a relevant article or not.[11] Since the change was made from abstracts to key-words in one of Lyons alerting bulletins the requests:abstracts ratio has shown no change. Much more important is the package which is presented. A clean distinctive wrap is vital. It need not be expensive but should preferably include a departmental motif or logo.

When a lot of detail has to be put over, the order of it and its legibility must be carefully considered. Different character sets (founts) can be used effectively. In connection with Lyons abstracts bulletin some time has been spent over the years not only in ensuring that the character founts are sets most acceptable to the human eye but also in fixing indentations and line spacings for the maximum ease and speed of reading. Spencer and colleagues have recently reported some work on these subjects.[12] Will upper-case computer print-out ever become acceptable across the board by sheer weight of indoctrination?

Immediately it becomes necessary to communicate more than a bare minimum of information, urgent consideration should be given to the use of visual aids in order to help the assimilation of the information by the receiver. Schematic diagrams are very useful especially when dealing with technically trained clients.[10] Pictorial representations using analogies from everyday life are of particular help in situations where several ideas are being merged together.

If it is at all possible, one of the best ways of putting over a complex report is to gather all the interested parties together and make a video or film presentation. Discussion breaks at appropriate points will enable required detail to be brought forth without being overwhelming.

Resources, professionalism and status

In many instances there will be insufficient money and equipment available to contemplate things like the relative merits of glossy instead of matt paper, let alone films. It is in these circumstances that real professionalism shows through.

The first essential is always to make it clear why a particular communication is being made and on what basic knowledge it is founded. If opinion is quoted this should be set down as such and not disguised as fact. A perfectly acceptable style for one situation, for example, a discussion meeting will be quite wrong for setting out organizational instructions or legal facts. Accidents may be caused by badly written instructions on a machine.

The most important thing about presenting a final report on research work is to include sufficient detail for later workers to follow on if they wish and to summarize the outcome of the work sufficiently briefly, yet capturing the essentials, for management. Additionally there may be security or confidentiality aspects to be taken into account. Lengthy reports confusing requests for action with research results will result in incorrect or no action.

Gee has recently said that although quality from an information department brings users, only money brings quality.[13] A department should not as a right expect to receive more money merely on the strength of doing a good job or producing an effective communication. Nevertheless, if there is a conflict between supplying an important client like a budget controller with information or a more junior person, priority should almost always be given to the senior of the two.

Often it is more tempting to do the reverse because, for example, the question will be easier to solve (perhaps a journal reference instead of a search) and presentation less taxing (a loan instead of a carefully worded summary). This is another occasion where a carefully cultivated acquaintanceship with one's clients in a business situation is vital since if it exists the 'right' approach can be hit upon with much less chance of upset.

Conclusion

For information to be presented effectively in the ever-changing environment careful attention must be paid to individuals' backgrounds and current interests. Full use should be made of the whole range of communication methods which is now available, having regard to costs and the available budget. In this way there will be a better-than-average chance that a person's needs for knowledge will be satisfied.

Acknowledgement

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Presenting search results to meet specific user needs

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Abstract

Users of information services need the technical content of documents rather than the documents themselves, and the results of a literature search should ideally be presented in such form that they can be readily assimilated and applied. The degree to which information can be pre-processed is affected by various factors including the ratio of laboratory to information staff and the context of the enquiry. The traditional bibliography may not be the best way to meet a specific information requirement, and in any case is likely to be produced by computer to an increasing extent: continuous prose may render the content of the literature more accessible. For this purpose, computerized retrieval systems should be designed to permit a fairly high recall ratio, so that the information worker can carry out a final selection of material and treat it in the way most useful to the enquirer.

Some examples are given to illustrate different methods of answering enquiries.

I WISH TO spend the next few minutes examining the provision of information from documents as it affects the user, with particular reference to the function of the information service.

For centuries, libraries tended to be both passive and archival institutions, and probably had no incentive to be otherwise. With the rise of industry, the tide of literature and the appearance of the scientific specialist, there grew up the wide range of library and information services with which we are familiar. Throughout this process of change, it has always been true that clientele have acquired documents not for their own sake but for their information content. I believe we have reached the stage when greater emphasis should be given to this important factor in the transfer of information, and that we should develop our professional practice accordingly. To the man in the laboratory, accessibility and ease of use are often as important as quality, and therefore I believe that the results of a literature search should whenever possible be presented in a form that dovetails into the project being supported.

There are several factors which affect the repackaging of information, and certain assumptions one has to make.

The first is the number of research staff for every information worker. In Metal Box, it so happens that the average ratio is about 1:40, and a reasonable amount of time can be devoted to individuals; I am primarily occupied in serving a group of 25. I am also assuming that users are geographically accessible, because close liaison is necessary, both to ensure that the final product is relevant in every way and to allow for the fact that the nature of the enquiry can change in mid-stream. There are of course situations in which these assumptions would be wrong.

Another factor is the extent to which the client is prepared to let the information worker act as an intermediary between him and the literature. Nobody can become familiar with a new field instantaneously, but an information worker can reasonably be expected to absorb new ideas rapidly and acquire enough background, from the client or elsewhere, to make writing a review of a certain aspect of the subject feasible within a realistic period of time. In fact, users tend to expect answers to enquiries to take the same form as on previous occasions, and personally I do not take too seriously any initial stated requirements regarding format, otherwise current practice is less likely to change and this aspect of the service can get into a rut. In a very specialized field the client may of course have to carry out a final sort of a document collection for relevance, and co-authorship of the resulting summary account is sometimes a valuable option. If a client wishes to learn about a field that for him is a completely novel one, the most effective means of enlightenment may be for him to read the literature and write a succinct account of it to crystallize his own thoughts and those of others.

Also, the context of the enquiry varies. For example, a decision may have to be taken concerning the allocation of resources to a project. The information worker can write a state-of-the-art review and draw conclusions pin-pointing some of the issues on which a decision can be based.

Next, a look at the relative merits of bibliographies and state-of-the-art reviews.

A bibliography is relatively cheap to produce in terms of both time and expertise required, and it is useful for mass distribution within a company or to its customers. The well-tried 'bibliography with abstracts' is particularly useful if it incorporates not only indexes but also other indicators to emphasize particular topics to the person or groups who originated the request. However, for meeting a specific information need in a technological field, it has a number of limitations: it gives individual items of information very little in the way of context, it is restricted to documentary sources, and it leaves the enquirer to do all the necessary synthesis before the information can be put to practical use.

On the other hand, a continuous account, such as a state-of-the-art review, can place everything in a meaningful context, and emphasize aspects of the subject of particular interest to the enquirer. It can also happily incorporate information from personal communications or other unpublished sources. In practice it probably makes economic sense for state-of-the-art accounts to be reserved for more important long-term projects, and less sophisticated presentations for run-of-the-mill enquiries where speed is the prime requirement. If only a few relevant items are retrieved in the course of a search, we have found it helpful to forward with the documents a memorandum giving a brief description of what has been found in them and pointers to their relevance to the problem in hand.

The psychological importance of a flexible approach can be appreciated by asking why it is that a high proportion of technical staff make greater use of oral rather than documentary sources of information. This is partly because a colleague can provide a fairly quick answer and is probably at least as up-to-date as the literature, whereas the latter, of course, takes time to search and is often out-of-date by its very nature; but more to the point, a response from a colleague is directly related to the enquiry in both content and the form in which it is given.[1] This latter characteristic can to a large extent be transferred to written communication, thus making it more acceptable in the long run.

I note in passing just two other necessary features. Firstly, the material selected for inclusion in the answer to an enquiry must be directly related to the work in hand. I suppose this is self-evident, but it is worth remembering that the usefulness of the content of a document as published is not always obvious at first sight. Clearly the information worker must have a good understanding of why the enquiry arose in the first place. Secondly, any answer to an enquiry that consists largely of continuous prose should have a lucid style to make it easy to read and digest, and the overall arrangement should attract and sustain attention; our products are always competing with substantial quantities of paper that occupy the tops of people's desks, not to mention other demands on their time. The information worker should be as adept at handling the literature and its subject matter as the scientist is expected to be at handling equipment.

There is another aspect of the provision of a tailor-made 'information package'. Given the usual courtesies of good public relations, the acceptability of a service of the kind we provide is determined to a large extent by the quality of its products. The form of presentation of the 'package' will be a major selling point to clientele. Also, the practical utility of regularly disseminated documents is a tangible return on investment in the service. This is a good reason for producing quality material that bears a similarity to well-presented internally produced laboratory reports and the like, because senior staff feature on the distribution lists, so publicity of the right kind comes as a matter of course.

There is one development in particular that highlights the need to exploit thoroughly the content of documents rather than simply manipulate the documents themselves, and that is the potential contribution of mechanized literature searching. The key question here is 'Which tasks are best carried out by machine and which by people?'

What can a computer be expected to do? Given a data base appropriate to the enquiry, it can provide an output with high precision ratio and low recall, or vice versa. It can also arrange and print this output in broad subject categories, with abstracts or a plentiful supply of keywords. As time goes on, these tasks will presumably be performed by machine to a large extent. Indeed, if research and industry become more and more centralized on the grounds of economy and efficiency, and the provision of information and documents follows suite, computers may be used increasingly in this way.

What a computer cannot do is to perform a final sort for usefulness to the enquirer, critically evaluate the items received, and turn them into a more coherent account in the manner I have suggested. It therefore seems very desirable for the input—including the indexing language—to permit a broad definition of precision and a relatively high recall, so that a high proportion of the total intellectual effort required in the information transfer process can be expended at the output stage. In this way I would hope that one of the more creative parts of the sequence is allocated to the information worker, and at the same time a more helpful service is provided for the enquirer. We have in the past sometimes been regarded as paper pushers.[2] It would be a pity if in future we were to acquire the label of machine minders!

Let me now give some examples of answers to enquiries received by Metal Box Company's Library and Information Service, which I think help to illustrate how a particular need can determine the format of the answer provided. I must apologize in advance for circumlocution and a lack of detail, but most of these activities have commercial implications, and I am therefore limited to that extent.

The first example is the need for techniques in instrumentation for measuring certain mechanical properties of plastics. It so happened that most of the material was referenced in one handbook, and was therefore quickly located and obtained. About twenty items were forwarded direct to the user. The small scale of his project and the time element rendered any repackaging inappropriate. The user culled various ideas from the articles to apply to his own design.

The second example is the effect of changes in chemical properties on the values of physical parameters of certain materials. The data was widely scattered in the literature, and was therefore collated and reviewed in one report, which was up-dated periodically for as long as the subject was of interest. The result was an accessible quick-reference guide for the laboratories.

The third requirement was to redesign a particular device from first principles. The necessary detail did not appear in the journal literature, and so a patent search was undertaken, bearing in mind certain constraints on design technique. The dozen or so most relevant patents were summarized in a report, along with simplified diagrams, mode of action of each example of the device, and characteristics of special interest. This was an immediately understood document which contributed towards making the appropriate decisions. Incidentally, patents constitute an area in which any amount of repackaging is of value, simply because 'patentese' is at best tolerated by the user and at worst disliked intensely!

At one stage there arose a need for a clear picture of the situation regarding certain legislation as it applied to the packaging industry in various countries. There were no readily accessible documentary sources. Therefore we compiled a questionnaire covering the items of interest, and circulated it to our Associates and Metal Box Overseas. The answers received were incorporated into a review arranged by country, which provided a representative survey of current regulations, and enabled the company to plan accordingly, with particular reference to export activity.

Another enquiry involved the provision of a mathematical description of the fluid dynamics of a particular closed system. There was no coherent account in the literature at the time, so we identified the relevant factors, found the appropriate equations, and wrote a technical paper. Where the literature was lacking, we drew on the expertise of individuals outside the company. Finally, some notes were included as to which physical parameters were needed prior to experiment and calculation; thus the paper was made to tie in fairly closely with laboratory practice.

One information survey was carried out to determine which parameters we needed to measure for an application in polymer technology. The subject was of interest to various personnel within R & D Department, and the findings were presented verbally by the information worker at a meeting of those concerned. This was followed by a discussion of the implications. The exercise was interesting because the member of the information staff was able to take advantage of the directness of oral communication, as alluded to previously; also he could acquaint himself with the specific interests of individuals who were normally geographically separated, and in the course of discussion was able to suggest subjects on which further information might be worth acquiring. All this was complementary to the internal report which was subsequently written and distributed in the usual way.

Finally I shall mention a project which is nearing completion. There is available a considerable body of information on one of the raw materials which the company uses in quantity. However, this information has not been brought together to make it readily available to those who need to apply it. We therefore engaged in a collaborative exercise with technical staff in collating information on manufacturing practice, applications and testing techniques, drawing on sources in the company and in the literature. The point of particular interest is that there are several methods of entry into the text of the compilation: for example, two are related to the problems encountered in handling the raw material. One is concerned with quality control of the material prior to use, and gives details of its physical/chemical properties and discusses other characteristics. The other deals with its behaviour during specific manufacturing processes. The work is therefore structured to relate to areas immediately familiar to those who will be using it.

On more than one occasion our information surveys have been recorded and costed in a similar manner to research projects. I find this encouraging, because I think it reflects the fact that our work is linked to particularly significant areas of R & D activity. Certainly wider adoption of this approach could only have a beneficial effect on information services.

In conclusion, it is common knowledge that the image behind a mirror resembles the object in front of it. I believe that if we take care of the object—the internally disseminated product—our professional 'image' will take care of itself.

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An Information Broker as a member of a Health Service Planning Unit

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Abstract

A health service strategic planning division had difficulty obtaining information needed to support health care improvement projects, despite the availability of library and data systems. The post of 'information broker' was devised and set up as a two-year experimental project under a special grant; the broker working as a member of the planning team and charged with relating to existing information services and promoting information flows. The workload fell into two main categories: information support to specific planning projects, and information support in general to the planning team, the latter category comprising a current awareness service and the development of structures to provide communication. The broker's services were less effective in the area originally defined by the planners as of their greatest need and more effective in areas where information gaps had not been specially noted. The original concept is now being reshaped.

THIS PAPER GIVES a brief account of a research and demonstration project set up to investigate the information needs of health service planners, and ways in which these might be met.

Origins of the project

The 'health service planning unit' of the title was a department of the Wessex Regional Hospital Board. R.H.B.s were the responsible authorities for planning and developing hospital services within a defined geographical area, serving, in the case of Wessex, a population of nearly two million. The R.H.B. had a staff of about four hundred: administrators, medical and nursing advisers, and technical building staff. Within this setting the 'Forward Planning' unit was small, having an overall staff of ten, and relatively new, having been in existence for two years at the time this project was set up.

This 'Forward Planning' unit was unusual within the health service of its time in having a wide-ranging view and understanding of both planning and information; for the planning horizons of the parent organization had traditionally been confined to a view of buildings, and the health service had been slow to accept even conventional information systems and services.

The 'forward planners' saw planning as a long-term process of defining needs and objectives, examining ways of achieving these, selecting priorities, allocating resources and evaluating the outcome. In analysing the theory and practice of planning they became aware that information plays a crucial part, and felt that their information needs were not being satisfactorily met by the available information services—a statistical unit and a library service. They recognized that there was other information which these were not capturing, which came in other forms and through other channels, and felt that the effectiveness of their decision-making would be enhanced by a 'better' flow of information.

They saw a possible solution in having a person based in their planning unit—and therefore in a position to know and understand the planners' explicit and implicit information needs—responsible for collecting, selecting and analysing the information, and for presenting it at the appropriate time and in a manner likely to encourage its acceptance and use. Such a person would be an 'interface' between the planners and their sources of information.

A grant was obtained from the King Edward's Hospital Fund and with this an experimental post was set up in the planning unit, using the title of 'Information Broker' to indicate the two-way nature of the service. The post was given a high-status administrative grading.

The Broker's services

Work patterns during the two-year life of the project were somewhat unsettled and unpredictable in view of the impending and actual reorganization of the N.H.S. (1st April 1974). This required a lot of short-term work and interfered with development of the planning role of the unit and the Regional Hospital Board.

The broker's activities during this time can be grouped into three categories:

Giving information support to specific planning projects.
Giving information support in general to the planning team.
Planning activities undertaken as a full member of the planning team, and appropriate and valuable in giving an insight into the planning task.

Those activities with an information content are described in some detail.

Information support for specific planning projects varied according to whether the broker was working to an individual planner or to the unit itself, and was involved at the beginning of the project, intermittently, or continuously during its life.

One particular task arose from D.H.S.S. trials of their proposed new planning system. This was to collect and present information on the Regional Hospital Board's planning policies—their objectives and priorities—in relation to the whole range of health care services (*e.g.* for groups such as the Elderly, medical and surgical specialities, support services such as Transport). Such policies would have to take account of:

National policies.
Regional working party reports or advice of individual experts.
The characteristics of the population served.
The resources available and their distribution and use.
Experience and comment from inside and outside the N.H.S.

This information came in numerical, narrative, and oral-verbal forms, ranging from hard fact to analysis to speculation. It had to be gathered from both the formal and informal sources and systems, reviewed and analysed, ordered and indexed; and a format and manner of presentation devised.

While this might appear to be a comparatively straightforward task it had not been the practice for Regional Board policies to be systematically assembled and published and no mechanisms existed for this. The exercise drew attention to deficiencies in the way in which the Regional Board functioned as a corporate entity in drawing up its policies. An important information role in relation to regional policies began to become clear.

Information support in general to the planners was provided in two main ways: one through a 'current awareness' service and the other by setting up and strengthening structures to facilitate communication. There was a prior concern to create or maintain the atmosphere in which such structures and services would be accepted.

The 'current awareness' service drew on sources external to, as well as internal to, the N.H.S., scanning journals, papers, letters, memos, reports of meetings, and occasionally capturing a verbal comment. The papers, or references to them, were circulated weekly along with material provided by others in the unit, as a means of keeping planners up to date and giving them an opportunity to deepen their understanding.

The 'structures' for communication were several. One was a regular divisional meeting where ideas and experiences were shared and future projects debated; the broker contributed by preparing agendas and ensuring that a record was kept and action followed through. A joint diary was another system to enable members to follow each other's activities, and there was oversight of the filing system and its holdings of records of progress, informed opinion and background reference information. Systems of regular communication with others outside the division were needed, but little achieved in the confusion of reorganization.

The rudiments of many of these 'general information support' activities were already in existence; the broker's contribution lay in systematizing them and extending their scope.

The Future

The context for the 'Information Broker' experiment has changed with N.H.S. reorganization, being now a much larger planning and development unit in a Regional Health Authority. The post has become part of the new management structure, and the role is being redefined and refined for the new context in the light of the two years' experience.

A key principle of the reorganized N.H.S. is that there should be a more systematic debate about planning policies, about objectives and priorities and means. This debate will take place at all levels of the service, and involve providers and consumers of health care, as well as outside agencies and experts.

A main emphasis of the broker's role will be in relation to these policies:

In assembling and publishing existing policies.
In ensuring that policies are regularly reviewed and up-dated.
In recording progress towards their implementation.

This will be achieved through the general information support activities already described:

Through the current awareness service that would capture information in any form and from any source that might be relevant to existing policies.
Through providing structures that will ensure that policies are regularly reviewed and new ideas incorporated; and that the results of any reviews are disseminated as appropriate.

The other aspects of this general information support will continue much as before. There will be extra emphasis, however, on communication between the planning unit and the region, with the broker acting as co-ordinator, for example, in preparing newsletters and reports, and in arranging meetings between planning staff at the different organizational levels.

This role definition differs in some respects from that devised when the project was set up:

It specifies a clear task in relation to planning policies.
It does not include specific project support to an individual planner, as the two years' experience has shown the difficulty an individual has in defining the point at which he can involve someone else in his own necessary information work.
It emphasizes the need for structures for communication and for someone to link and co-ordinate these, in contrast to the original concept which did not explicitly refer to any need in this respect.

The essence of the original idea, of having a member of the planning team particularly responsible for promoting information flow and for exploiting the whole range of information forms and sources, remains the core of the broker's role and tasks.

Assessment.

The foregoing is an 'inside', and necessarily fairly subjective, account of the role of an Information Broker in a health service planning unit. Aslib have been monitoring the project, and Anne Wilkin gives a more objective view in the following paper, 'Some Comments on the Information Broker and the Technological Gatekeeper' (*Aslib Proceedings* 26 (12), 1974, p. 477-82)

Some comments on the Information Broker and the Technological Gatekeeper

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Paper presented at the 48th Aslib Annual Conference, Churchill College, Cambridge, 22nd–25th September 1974

Abstract

Some librarians and information workers would suggest that although the name information broker is new, the services provided by the broker are no different from those they provide themselves. However, it has also been suggested that since the broker is a full-time member of the user group she serves, taking part in its normal assignments and playing an important role in promoting the communication of information, her role has more in common with that of the technological gatekeeper. The relationship between the broker's role and other information-handling roles is one of the issues Aslib R & D Department has considered during its 2-year assessment of the post, and some findings of general interest are discussed in this paper.

Since the broker's post was established by the users themselves, their reactions to the broker are of particular interest and are considered. Brief attention is also given to the problems the broker faces in balancing her information activities against her other duties.

WITHIN THE LAST 5 or 6 years, the library/information field seems to have been introduced to a variety of information roles including, for example, the technological gatekeeper,[1,2,3] the information communicator,[4] the intelligence officer,[5] and the information broker.[6] With relatively little known about many of the new roles, it is hard to tell whether they are offering anything new to the user, or whether they are simply overlapping unnecessarily with the established roles of the librarian and the information officer.

The information broker and the technological gatekeeper are two roles which are arousing considerable interest and which should, therefore, be examined fairly critically. The origin and development of the broker role has been outlined by the broker herself in the previous paper,[6] and the viability of her role has been assessed by the Aslib R & D Department.[7] As many information workers will already know, the technological gatekeeper was first described about 6 years ago by Allen and his associates during their studies of information flow in American R & D engineering laboratories. Recently, a number of people have suggested that the gatekeeper role has close similarities with that of the broker. In this short paper an attempt is made to emphasize some of the important features of these two roles.

The question of where an information role should be located in relation to the user is a contentious one, the answer depending on a range of complex interrelated factors, such as the resources given to the information role, the reactions of top management and individual users, and the type of information being processed. In connection with these factors it is appropriate to emphasize three important characteristics of the broker: she provides information support to a small group of up to eight planners; she is accepted as a full member of this group, taking part in some of its professional work; she has good status in this group. It is also apposite to emphasize that these three characteristics were deliberately selected by the planners who considered them essential ingredients of an effective information support role.

The technological gatekeeper also shows these three characteristics, but unlike the broker he appears to have acquired them naturally. Allen has suggested that some members of a user group become gatekeepers for the related reasons that their technical knowledge and expertise is highly rated both by their colleagues and by management; that they are very active in seeking information from both verbal and written sources; and that they have the ability to interpret this information and present it in a useable form to their colleagues. On the evidence so far, one gatekeeper appears to support on average between five and ten colleagues.

Again, unlike the broker, the gatekeeper provides an informal information service as a natural extension of his professional activities. One argument put forward suggests that this is the only main difference between the two roles and that the broker is simply a formalized gatekeeper. But this viewpoint overlooks the fact that relatively little is known either about the psychological factors affecting the transfer of information, or about the two roles themselves. For example, in a recent paper, Pearson[8] has emphasized that it is not yet clear whether the gatekeeper role is permanent or transient, or whether the gatekeeper is unusual in being able to handle variety as well as quantity of information without suffering overload. Taking this last point further, it is not clear either where this overload would occur if the gatekeeper were asked to provide the type of support which the broker provides, nor is it clear whether an overload situation would affect the gatekeeper's information activities or professional activities, or both.

Despite the many unanswered questions, it is possible, however, to take some practical advantage of the gatekeeper concept even if it is necessary to be cautious about premature conclusions. For example, in a paper at last year's Aslib Conference, Yates[9] described how recognizing that many of his users do not use much literature, if any at all, and taking account of Allen's work, he established in his company a network of a few dozen friendly experts. His information unit works closely with these experts organizing, indexing and storing information for them, while encouraging them to interpret new information and transmit it and to use their experience to answer enquiries for their colleagues. These experts were chosen for their friendly disposition, their technical authority in the main areas of work, and their 'visibility' in the company, resulting from their management and working-party functions. Yates is reasonably confident that the gatekeepers are receiving information and that decisions and actions are resulting from this information.

The roles of the 'friendly experts', the gatekeeper and the broker emphasize the importance attached both by the information workers and the users to the status of the information provider, the importance of his involvement with the user group, and the need for this user group to be small in number. But it is not yet clear how the three factors interrelate, or whether they result in a substantially improved rather than an apparently improved information support for the user.

Fortunately, it is possible to examine fairly critically the broker's information support activities which can be considered under three broad headings: preparing a weekly current-awareness (CA) file; promoting communication; providing support to individual projects by packaging information in the most appropriate way. Although the activity of promoting communication, where the broker organizes and participates in regular group meetings, is perhaps the most obvious point of difference between her role and that of many librarians and information workers, there are some less obvious differences which are worth examining. These are given in figure 1.

USER COOPERATION
INFORMAL DOCUMENTS
VERBAL CHANNELS
FEEDBACK

FIG. 1: *Aspects of Broker's information activities*

First, user cooperation is evident in all three activities. The success of the group meetings depend on it, and so too does the CA file which, apart from the processed information contributed by the broker, is largely based on documents belonging to the planners, and contributed by them at the broker's request. The importance attached to group meetings may seem surprising, but it is simply a recognition that while the planners are themselves important sources of information, they do not always recognize this fact and they need encouragement to exchange information with their colleagues. The extent to which user cooperation is needed in the project support activity is largely influenced by the type of package the broker needs to prepare and the degree of confidence which a planner has in her. The 'package' may, for example, be evaluative in nature and may contain a mix of statistical, factual and opinion information, the exact presentation of which may only be determined after repeated discussions with the planner concerned. With some information, for example that on Regional Policies, it is important for the broker not only to package the available information, but also to identify and discuss areas in which information which was needed did not exist or was inaccessible.

Second, without user cooperation it would be almost impossible for the broker to obtain access to the informal documents such as letters, memos, notes of meetings contained in the planners' working files which are extremely important information sources in planning.

Third, as much of the planners' information, particularly that on social and political issues, is obtained in an *ad hoc* fashion from personal contacts, the broker must pay particular attention to verbal communication channels, and where she cannot access these herself, she must direct the planners to them.

Fourth, feedback really falls into two categories. On the one hand, the broker obtains regular feedback on the planners' interests through her daily contact with them, and particularly through the regular group meetings. On the other hand, she has some responsibility for providing feedback on the planners' activities to interested parties inside and outside the NHS.

In essence, the four points listed in figure 1 emphasize the importance to the health care planners of informally communicated information. The planners have assumed that a member of their group, particularly one with high status, will have a good chance of identifying and accessing the range of informal channels. And there can be little doubt that the broker has played an important role in improving access to and in packaging a range of demographic, social and political information. But just as some gatekeepers specialize in tapping documentary sources of information, while others specialize in tapping verbal sources, in a similar way, the broker emphasizes different aspects of her activities at different times. To take a simple example, much of the information required may be already available and so the broker may concentrate on packaging it. The reverse also happens. At certain times published sources of information may be more important than verbal sources and vice versa. As with most information roles, the ability to adapt to a dynamic situation is of paramount importance.

In the more general context, it can be and has been argued, with justification in many cases, that if senior managers were to give better support to the information unit's role by according it the status necessary for it to access important channels of communication, and by giving it adequate manpower and financial resources, that the information unit could, in theory, play a role similar to that of the broker. Whether it would be appropriate for the unit to do so in practice will of course still be influenced by such basic issues as the points at which it is best to tap the different information channels, and the extent to which the information must be packaged. And of course, the reactions of the user will still be one of the important influencing factors.

In the specific context of the health team, the planners' subjective reaction to the broker's presence is that it results in better quality planning because, they feel, plans are formulated on a sounder basis than in the past. They also see the role not just as a supporting and catalytic one, but also as an educational one, where the broker increases their awareness of potential and actual information sources, which they can then attempt to exploit themselves if they so wish. With hind-sight, they realize that it must take time for the broker to be widely accepted in the personal contacts network, particularly where strong organizational and social barriers are operating. They now also realize that by involving the broker in their problem-solving activities they must face the problem of deciding where the broker's information activities end and the planner's work begins. To some extent they have lessened this problem by delegating to the broker the long-term task of collecting and packaging information on planning policies. While this information is an important input of most planning assignments it need not necessarily overlap with the activities of an individual planner.

As for the broker, she has the difficult task of combining her information role with her planning role which at times presents problems of conflict. Moreover, unlike the gatekeeper, who, according to Allen, is part of a network of gatekeepers, the broker is relatively isolated, particularly as information systems are so poorly developed in the NHS. A further problem facing the broker is that although, as indicated earlier, she can easily obtain feedback on the planners' activities, it is much more difficult for her to obtain feedback on their reactions to her information support activities. The planners tend to assume that the broker automatically becomes aware both of their unvoiced appreciation of, and their reservations about, her activities at any given time. Their assumption emphasizes the fact that close contact between information provider and user does not immediately or necessarily result in easy all-round communication.

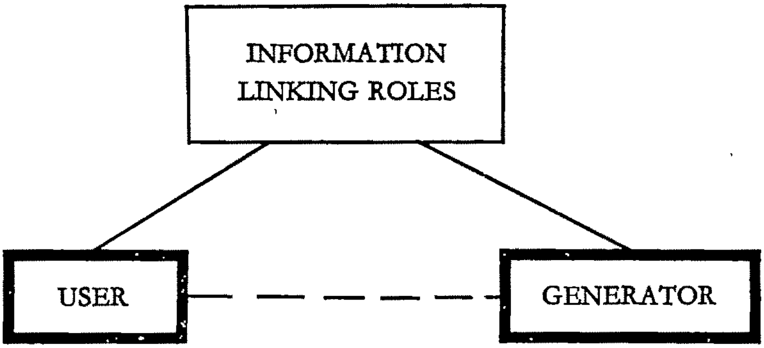

FIG. 2: *Simplified diagram of flow of information*

In conclusion, whether one accepts or not that the gatekeeper and the broker offer to the user something the information officer or librarian cannot, it is important to recognize that the broker role in particular offers some valuable insight into the attitudes of administrators to the information-transfer process. This is an advantage which must not be minimized, particularly as administrators are an important component of the labour-intensive NHS. According to the Office of Health Economics,[10] the NHS at the present time employs about 900,000 people, which is approximately one-twentieth of the national work force, and spends over 3,000 million a year, which is approximately one-twentieth of the national wealth.

Inevitably, there are many variations on the roles mentioned in this paper, but they all have the common aim of linking the user of information with the generator of information. This concept is outlined in a very simple way in figure 2, which suggests that while in theory, the simplest link is between the user and the generator, in practice, a variety of intrapersonal, social, organizational and technical barriers appear to block the way. Although the information linking roles are also affected by these barriers, these roles by their very nature are attempts to overcome some of the barriers. The important point is that the different roles recognize one another's existence, so that they can provide one another with support when necessary, and at the same time reduce the possibilities of unnecessary overlap. On an optimistic note, it is encouraging to see that not only are users and providers of information working more closely together in some situations, but that the generator of information is also being brought into the picture. For instance Davies[11] has discussed the concept of a communication scientist who is a member of the information unit with a special responsibility for encouraging the creation of new information and discussing with the creator the way this information should be presented.

Acknowledgement

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DISCUSSION

Session 2: Effective information, handling and presentation

MR J. S. KIDD (University of Maryland/Cranfield Institute) asked if the broker role would replace all or part of an existing gatekeeper's role.

ANNE WILKIN (Aslib R & D) first stressed that at no time was it the planners' intention to replace either the possible gatekeepers or the local librarian by the information broker. During the project, however, it became evident that a member of the planning team could be considered to be a technological gatekeeper, and so his information activities were compared with those of the broker. As far as one could tell, the broker's presence did not restrict the gatekeeper's activities. In fact, he seemed to appreciate the extra dimension brought to the team by the broker. It is true that this gatekeeper's support tended to be spasmodic but this feature seemed to be related to, for example, the weight of his own workload, his awareness of other planners' needs and his motivation at any given time to try and meet these needs.

MR P. H. DAWE (CSIRO, Australia) observed that Anne Wilkin had said that in certain circumstances the broker's role would be taken over by the library/information department. But was she not stressing the importance of the broker being part of the team?

ANNE WILKIN replied that it was necessary for this broker to be part of the planning team so that she could both *collect* and *package* the range of current information which came not through the local library system but through a variety of informal channels. In situations where information from a range of published primary and secondary publications is the important input the skill of the library/information unit in collecting this information is usually highly rated. The contentious question is the extent to which the unit should then repackage this information. Recent examples from industrial situations suggest that where senior management gives the unit adequate financial and manpower resources the unit can establish a better rapport with individual users who are then prepared to allow the unit to play a role similar to that of the broker.

MR DAWE then asked Mr Bordiss how he had arrived at his ratio of information staff to users.

MR BORDISS replied that the ratio was obtained quite simply by dividing the number of qualified R & D staff served by the number of qualified information staff serving them, *i.e.* $320 \div 8 = 40$.

MR J. S. RIPPON (The Metal Box Co. Ltd.) added that the important point about this ratio was that the information scientist can become closely acquainted with the work and needs of his users so that he is able to give the kind of service described by Mr Bordiss.

MR P. F. COLE (BP Research Centre) felt that Mr Bordiss showed great understanding of the problems of specialized information and that Metal Box and BP share similar philosophies in this area. He would like to emphasize Mr Bordiss' point on the role of computers. At the present stage of development, computer services can do no more than provide raw input to subsequent manual processing. To Anne Wilkin, he suggested that the technological gatekeepers' information activities were sometimes a substitute for, rather than a natural extension of, the individual's professional activities.

MR N. ROBERTS (Sheffield University, Post Graduate School of Librarianship and Information Science) commented on the possible dangers of confusing record presentation, information and knowledge and he asked whether Mr Hoey had attempted to measure the impact of received information on the recipient.

MR HOEY replied that for a number of reasons he had not yet been able to make an attempt of this kind.

MR J. P. BETHELL (NATO Saclantcen ASW Research Centre, Italy) felt that his own research tended to support an earlier suggestion that the information activities of gatekeepers act as a substitute for, rather than an extension of, their professional activities. His experience with a 'super' gatekeeper who displayed in full all the primary and secondary characteristics described by Allen, indicated that the more the gatekeeper played his information role the less he performed his professional work, and more surprising perhaps, the more he annoyed his colleagues. This finding does not necessarily mean that information workers, in particular information brokers, lose respect because of their information role but it suggests perhaps that a research group becomes annoyed with another member of the team who tries too hard to push information on them instead of getting on with his work. The psychological aspects of the information-transfer process deserves closer attention.

ANNE WILKIN agreed with Mr Bethell's comments and indicated that the broker had kept a carefully designed diary for much of the 2-year experimental period. The information from this diary was now being analysed to see how the broker divided her time not only between her planning and information activities, but also between the different types of information activities. The 'annoyance' factor mentioned by Mr Bethell did arise occasionally, not so much where the broker provided general support through current awareness and promoting communication, but where she gave special support to individual planners, some of whom preferred that the initiative for an information gathering exercise came from themselves rather than from the broker.

MR C. P. R. DUBOIS (International Coffee Organization) asked Maureen Valdez how she organized information for purposes of storage and retrieval.

MAUREEN VALDEZ replied that there was little problem in this area at the moment because the unit had not been operating long enough to create one. At present a simple filing system is used and of course the library can give some advice on bibliographic issues.

Letter to the Editor

Sir,

During the Summer I was invited to put in order and catalogue a small collection of material to form the nucleus of a library for the United Kingdom Hovercraft Society. It is hoped shortly to publish a check-list of the library's holdings and it is already possible to give a limited information service. Anyone who wishes to have a copy of the list and to know more about the Society may like to contact its Secretary, Mr P. Bartlett, at the Institution of Production Engineers, 146, Cromwell Road, London, S.W.5 Mr Bartlett would also be very glad to receive any library literature relevant to hovercraft and related subject-fields.

It is good to see the beginnings of a new special library and information service at a time when one often hears of the demise and dispersal, or economy-enforced neglect, of small special collections (particularly, it seems, in the social sciences). I do not know whether Aslib would be inclined to initiate a 'dating' service to bring together those who need help to maintain such collections and volunteers who could spare time in so good a cause, either free-of-charge or for a small honorarium. If not, I would be willing to try to arrange such links if anyone would care to write to me, at 10, Saxon Close, Runwell, Wickford, Essex SS11 7EU.

Yours faithfully,

A. E. STANDLEY

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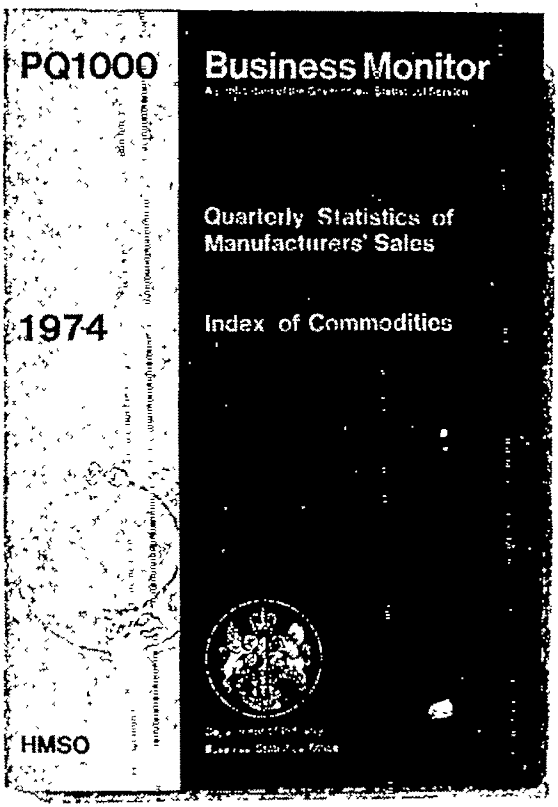

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